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Campus Luigi Einaudi

Book of Abstracts

Contents

THE NEURAL BASES OF PREDICTIVE STYLES ALONG THE AUTISM-SCHIZOPHRENIA CONTINUUM 1002	1
From memory to identity: the impact of mild cognitive impairment on autobiographical memory and its implications for clinical practice and research 1003	1
Exploring the Psychometric Dimensions: Theoretical and Practical Applications of Artificial Intelligence and Gamification in Education, Learning, and Neuropsychological Assessment 1004	2
Comparison of Hypothetical Options by Investigating Choices in Emotional Scenarios (CHOICES) 1005	3
Dissecting the Sense of Agency: Integrating Sensorimotor and Cognitive Cues Across Different Experimental Paradigms 1006	3
Senso di responsabilità: quando l'azione si fa coscienza 770	4
Neural signatures of complex and real-life memories 818	5
Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline 686	5
Psicologia dell'arte e neuroestetica 701	6
Preferenza esplicita e implicita per la simmetria in diverse categorie di oggetti 771	7
I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia 747	7
Introduzione 1016	8
Interoceptive Awareness as a Moderator of Cognitive and Autonomic Effects of taVNS in Healthy Adults 689	8
Introduzione 1022	9
Introduzione 1023	9
Aging does not impair neural sensitivity to extrafoveal contextual violations 828	9
Traslazione del modello Sign-Tracker/Goal-Tracker per lo studio dell'attribuzione della motivazione condizionata 878	10
Predictive Mechanisms in the Experience of Agency: Exploring the Role of Fatigue through Sensory Attenuation 687	10

Poetica bayesiana: Un nuovo modello per lo studio dell'estetica del linguaggio 986	11
Towards the development of personalized Cognitive Stimulation (CS) interventions in people with cognitive impairments 740	12
Altered theta and alpha oscillations during autobiographical memory retrieval in an individual with highly superior autobiographical memory 877	13
The effect of Sensorimotor and Cognitive Cues on the implicit and explicit experience of agency 737	13
Interazione gene x ambiente nel trattamento della dislessia evolutiva: uno studio traslazionale 928	14
Shared spectral fingerprints of temporal memory precision and representation of the temporal structure of complex narratives 822	15
Assumere e presumere in psicologia dell'arte, e il ruolo della ricerca storica ed empirica 587	16
Evaluating the Effectiveness of Cognitive Interventions for Healthy and Mild Cognitive Impairment Adults: A Comprehensive Umbrella meta-analysis 776	16
The Social Dimension of Agency: How the Shared Sense of Agency shapes Moral and Intergroup Decision-Making 790	17
Sexual behavior as a model for the study of the neurobiology of motivation: insights from animal studies 845	18
Embodying a Divine Avatar: Modulating Self-Perception and Moral Judgment in Virtual Reality 730	18
Specialization of Retrieval-Related Activity for Different Memory Dimensions 862	19
Costruendo connessioni significative con il patrimonio culturale: il caso del Sarcofago degli Sposi per NEURO-Museum 892	20
The self and peripersonal space: a novel two-phase audio-tactile paradigm and its implication for defensive boundaries 803	21
Domande e discussione 1024	21
Neural correlates of the semantization process: graph-like construction of social knowledge from TV series encoding 941	21
L'arte moderna fa bene? Dipende dal coinvolgimento 707	22
Open Discussion 1044	23
Diverse dinamiche decisionali alla base del riconoscimento di stimoli noti e nuovi 491 . .	23
The relationship between sleep-related memory reactivation and dreaming: a Targeted Memory Reactivation pilot study 700	24
Toward a Universal Model of Subjective Financial Well-Being: Evidence from Iranian Emerging Adults 622	24

Towards a New Scientific Utopia: A Blockchain-Based Framework to Support Open Science in Psychology 501	25
THE SWAP READING TEST: NORMATIVE DATA TO MEASURE PERIPHERAL ACQUIRED DYSLEXIAS IN AN ITALIAN ADULT POPULATION 500	26
Exploring the influence of number magnitude on walking direction: Evidence for spatial-numerical associations with a free response task in a virtual reality setting 512	26
Cognitive and executive task-specific functions in elementary assembly tasks: a theoretical mapping for mental workload assessment in Human-Robot Collaboration 532	27
Plant awareness disparity: Do we count plant differently? 544	28
Differenze di identificazione nelle parole tabù in L1 vs L2: Una questione di esposizione? 547	28
The Impact of Gaze Direction on the Other-Race Categorisation Advantage 599	29
Accident Risk Reduction of Vulnerable Road Users: An Interdisciplinary and Multi-Perspective Approach for the Improvement of Urban Road Safety (the ARCADE Project). 607 . .	30
L'influenza dei meccanismi attentivi sull'abilità di lettura nell'invecchiamento sano 669 .	30
Impatto sulla cognizione di un training centrato sulle rappresentazioni del corpo funzionali e interocettive 678	31
Chi sono i clown dottori? Stili comici, giocosità, flessibilità cognitiva 666	32
User Experience Questionnaire for Virtual Reality Applications in Healthcare (UXVR-H): Development of a New Assessment Tool 609	32
Negotiation under the lens: individual differences and brain-to-brain synchronization explored with fNIRS hyperscanning 516	33
The rubber hand illusion questionnaire: An exploratory graph analysis of ownership, referral of touch, and control statements 536	34
An implicit approach to measuring conspiracy beliefs: the Conspiracy Theories Semantic Misattribution Procedure (CT-SMP) 562	35
Emotions modulate audiovisual binding and reduce visual-leading bias in speech integration 556	35
Why do we overshare? An exploratory study on the phenomenon of oversharing in a sample of Italian adolescents and young adults 557	36
DiffuseFace: a database of AI-generated face portraits to enrich diversity in emotion research. 588	37
Il rapporto tra Teoria della Mente e Funzioni Esecutive nell'invecchiamento sano: il declino cognitivo generale e dominio-specifico 531	37
Dual-Task Interference in Prospective Memory: Focal vs. Non-Focal Cue Effects 582 . . .	38
Nuovi strumenti per la detection del malingering: Groningen Effort Test 533	39

Motor signatures of Digital Intentions: A 3D analysis of typing movement on the smart-phone 567	39
Exploring the classical and numerical Delboeuf illusion: the impact of transcranial alternating current stimulation on magnitude processing 538	40
Collective minds, individual brains: EEG evidence from organizational decision-making 505	41
Hormones and Disgust: A Systematic Review of Gender-Related Differences 618	41
Trattamento Cognitivo Pragmatico in telehealth (@CPT) per adolescenti nello spettro autistico: modalità telehealth vs. face-to-face 504	42
Eye-Tracking Insights During Live Basketball Games: a pilot study 503	43
Creativity Evaluation Task: una versione italiana 692	44
Swipe Dynamics Across Generations: An Analysis of Touchscreen Interaction 674	44
Migliorare la diagnosi neuropsicologica: dai Punteggi Equivalenti ai Ranghi Percentili (con intervalli di confidenza), un'applicazione sul MoCA 8.1. 709	45
Aging and Time Perception: Differences in Explicit and Implicit Timing 724	45
Quando la rabbia non passa: validazione italiana dell'Anger Rumination Scale 546	46
Profilazione neurocognitiva nei disturbi da uso di sostanze e nel gioco d'azzardo patologico: risultati da uno studio transdiagnostico 520	47
Strategie di donazione di organi: l'effetto del consenso presunto e i modelli organizzativi di Spagna e Italia 527	47
The Virtual Memory Ecological Battery (V-MEB): Preliminary Psychometric Validation of a VR-Based Memory Assessment Tool 920	48
RAISE! Active Aging Training Enhances Spatial Mental Representations During Familiar Route Walking Across Cognitive and Psychological intrinsic Capacities 619	49
Testing the role of the beta band and the inferior frontal gyrus in linguistic prediction with HD-tACS 614	49
Improving Olfactory Assessment: An Item Response Theory Analysis of the Sniffin'Sticks Test 617	50
Comunicazione attiva: miglioramenti pragmatici duraturi nell'invecchiamento sano grazie all'Advanced Cognitive Pragmatic Treatment 524	51
Indagine multilivello dell'abilità pragmatica nella senilità: evidenze da persone con difficoltà cognitive riscontrate al MoCA e anziani normativi 519	51
TrAIngles - Software di scoring automatico basato su Large Language Models di un compito di Teoria della Mente lungo il ciclo di vita 577	52
THE AKABOOK PROJECT: FACILITATION IN TEXT COMPREHENSION 549	53

Cutting Time: How Editing Style and SMA Neuromodulation Shape Cinematic Time Perception 530	53
The contribution of cerebellar oscillations during others' mental states inference: an EEG-guided High-Definition transcranial alternate current stimulation (tACS) study 613 .	54
THE EFFECTS OF CIRCADIAN RHYTHMS AND SLEEP DEPRIVATION ON ATTENTION AND COGNITIVE FLEXIBILITY: EVIDENCE FROM THE ATTENTIONAL DEMANDS TASK 583	55
ASSESSMENT OF ATTENTIONAL COMPONENTS ACROSS THE LIFESPAN UNDER SINGLE-DEMAND AND SWITCHING-DEMAND CONDITIONS 585	56
Visuospatial Skills and Intention Attribution: A Review of the Object Perspective-Taking Test and Santa Barbara Sense of Direction Questionnaire with Exploratory Graph Analysis and Applications to Autism 610	56
Percezione del Rischio dell'Inquinamento Atmosferico e Accettazione delle Politiche Pubbliche: uno Studio Esplorativo su un Campione Rappresentativo Italiano 559	57
How far does the context trick the mind? What placebos are teaching us about human perception and performance 708	58
Innovazione digitale nella riabilitazione cognitiva della Sclerosi Multipla: il progetto REMOTE-MS 554	58
Does judging orientation elicits Spatial-Numerical Associations? Assessing the neural overlap hypothesis and automaticity of number processing 580	59
Neural categorization of hands from infancy to adulthood. 623	60
Stimolazione cerebrale non invasiva nel dolore cronico primario: una metanalisi di studi clinici controllati randomizzati 673	61
Abilità pragmatica e Declino Cognitivo Soggettivo: uno studio longitudinale nell'invecchiamento sano 522	61
Riconoscimento aptico delle sezioni trasversali in persone con e senza disabilità visiva 670	62
The Relationship Between Interoceptive Awareness and Sleep Paralysis 696	63
Central and peripheral components of the placebo effect on motor performance 695 . . .	63
The Spontaneous Brain: Mapping the Intrinsic Foundations of Behaviour and its Dynamic Changes. 999	64
From Structure to Behavior: Hypothalamic Subregions Volumes Predict Childhood Conduct Issues 499	65
The Relationship Between Personality Traits and Evaluative Conditioning 558	65
Two minds don't boost together: Target detection enhances the recognition of self-relevant, but not other-relevant, items 540	66
Scientific Reasoning Scale in Italy: Validation Studies 495	67
L'impatto della deprivazione visiva sui confini dello spazio peripersonale 943	67

Inhibition Of Direction: IOD 987	68
EEG correlates of color hue preference 494	69
Attentional boost effect and pattern separation: A dissociation between visual and verbal material 541	69
Political orientation and belief in climate change conspiracies: A path model of misinformation belief and exposition 846	70
Would You Donate to a Researcher at an Amusement Park? The backfiring role of incongruent background in a charity appeal 542	71
The Perceptual Limit in the Development of Reading Speed 932	71
Comparing ideal and real group mental representations: a multimodal hyperscanning study 506	72
Raccontare il proprio passato e ricordarlo sono la stessa cosa? Uno studio sugli effetti dell'ordine di somministrazione di strumenti per la valutazione della memoria autobiografica 543	73
Development and Validation of the Italian Dictionary for LIWC-22 586	73
Utilizzare un braccialetto per il monitoraggio della frequenza cardiaca durante una visita museale migliora memoria ed emozioni dei visitatori: Uno studio presso il Museo di arte moderna e contemporanea (MART) di Rovereto 594	74
REM sleep fragmentation effect on emotional memory and reactivity: an experimental study on healthy subjects. 598	75
Un effetto SNARC-like per il peso corporeo 571	76
Il ruolo dell'euristica dell'affetto nel modellare le percezioni dell'IA in medicina 639 . . .	76
La stima dell'accordo tra valutatori: il problema delle grandi differenze tra le soglie di classificazione 569	77
Meccanismi psicologici della discriminazione di genere: uno studio qualitativo comparativo tra Italia e Lituania 574	77
Uno studio elettrofisiologico sul legame tra apprezzamento estetico per gli stimoli musicali e la modulazione dell'apprendimento implicito in pazienti post-stroke 927	78
Empatia senz'anima: alessitimia e "paradosso emotivo" della personalità psicopatica 643 .	79
Il ruolo delle informazioni semantiche nella codifica spaziale egocentrica ed allocentrica durante l'invecchiamento 601	80
New Insights into Active Aging: Analyzing UJACAS with the COM-B Framework to Understand Opportunity and Capability's Impact 570	80
Interindividual memory differences are linked to corticothalamic networks during memory encoding and retrieval 656	81
Integrazione e segregazione multisensoriale: segnali percettivi emergenti nei bambini in età pre-scolare 711	82

Psicologia Positiva e Social Network Sites: Una review sistematica 509	82
Integrazione mentale alterata e disregolazione delle emozioni come possibili effetti a lungo termine di esperienze genitoriali disfunzionali: uno studio EEG di connettività funzionale prima e dopo l'attivazione del sistema di attaccamento 626	83
Evaluating Item Quality from a Person-Centered Perspective: Leveraging Latent Class Analysis for Item Selection 624	84
Individual Reward Styles Predict Brain and Behavioral Responses to Dopaminergic Challenges 745	84
Il ruolo della self-deception nel ricordo di eventi autobiografici 735	85
La corteccia premotoria dorsale (dPMC) orchestra l'immaginazione del ritmo musicale: uno studio di stimolazione magnetica transcranica (TMS) 875	86
Does culture matter? The role of individuals' cultural profile in anthropomorphizing robots. 548	86
A validation study for the brief form of the HEXACO Medium School Inventory Extended (MSI-E) 535	87
Enhancing Memory: The Role of 40 Hz Stimulation during Consolidation 843	88
A prima vista (e oltre). Un'indagine sperimentale sulla formazione di impressioni nel dating online 634	88
Rilevazione della sincronizzazione fisiologica nel servizio di counseling universitario 517	89
Searching for early cognitive and neural biomarkers of Developmental Dyslexia: preliminary findings. 917	90
Profili Temperamentali nei giovani adolescenti: uno studio sulla replicabilità empirica 489	91
Orientarsi nel Corpo e nello Spazio: Connessione tra Interocezione e Memoria Socio-Spaziale durante l'Invecchiamento 954	91
BRAIN CORRELATES OF BITTERSWEETNESS –A SYSTEMATIC AND CRITICAL REVIEW 734	92
Exploring the multimodal neural representations of words 783	93
Contrari ma coerenti: uno studio di replica di Moscovici et al., 1969 959	93
Love Sync: Emotional Linkage in Romantic Couples 502	94
“Typical and Atypical” Aging: From Cognitive Aging to Neurocognitive Disorders 589 . .	95
Sharper minds, Smarter athletes: the Cognitive Side of Sports 584	95
Interazione Geni x Ambiente: le potenzialità del modello preclinico 905	96
Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative 980	97
Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali 636	97

Introduzione 1014	98
introduzione 1017	98
Limitazioni alla guida e preservazione delle abilità cognitive. Uno studio longitudinale 788	98
EEG Correlates of the Flow State During Sports Performance 603	99
Brain reserve, gender, and social isolation: Implications for cognitive resilience in aging 590	100
Interazione tra gene e ambiente nella dislessia evolutiva: il contributo del modello preclinico DCDC2a 912	101
Libreria emotiva: interazioni tridimensionali per esplorare la consapevolezza emotiva 967	101
Neurophysiological Correlates of Effortful Task Performance 706	102
Quando la morale passa con il rosso: Validazione della Scala MORDE (Moral Disengagement in Road Driving Evaluation), prima misura del disimpegno morale nella guida trasgressiva 526	103
Early detection of executive (dys)functions as a neuropsychophysiological biomarker for cognitive changes and cognitive impairment 608	104
Differenze individuali nei circuiti neurali coinvolti in un modello animale di Disturbo Post- Traumatico da Stress 907	104
Il suono sembra reale? Uno studio esplorativo tra musica realizzata da compositore umano e compositore AI 978	105
Oltre i limiti: assunzione del rischio e meccanismi di disimpegno morale nei conducenti esperti 983	106
The influence of a soccer-based cognitive-motor dual-task training in virtual reality on cognitive performance and related brain processing 876	106
Depression and Amyloid- β as Predictors of Cognitive Decline: Evidence from the ADNI Cohort 596	107
Attaccamento e depressione: il ruolo protettivo dell'ambiente in un modello preclinico 909	108
Stili di guida: confronto tra misure auto-riferite e prestazioni di guida con simulatori a gradi diversi di fedeltà 718	109
The role of sports experience in audiovisual integration: a comparison between rackets players and swimmers 759	110
Tra persistenza e transizione: modelli dinamici a confronto per capire le emozioni nei gio- vani 965	110
Linking resting-state gamma activity to associative memory: a potential biomarker for cognitive aging and Alzheimer's Disease 593	111
Uomini e topi: un modello traslazionale per indagare la depressione indotta da esperienze avverse precoci 908	112

“Head on the Road, Mind Elsewhere”: How Susceptibility to Distractions Impacts Driving 657	113
Beyond the Hit: The Invisible Echo of Concussion in Sports 789	113
Mappare le emozioni nel Parkinson: un’analisi scientometrica della letteratura 970	114
Oscillatory signatures of healthy vs. unhealthy aging 774	115
Discussione finale 1025	115
Discussione generale 1026	116
Discussione generale 1015	116
Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali 847 . . .	116
Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics 605	117
To aggregate or not to aggregate: Effect-variant measurement models and their advantages 728	117
Individual Differences in Salience Attribution: Neural Correlates of Sign- and Goal-Tracking in Human 742	118
Innovations in psychometric modelling: New approaches to understanding psychological measurement 726	119
Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni 705	120
Embodied emotion and motivation: interoception, physiology, and brain dynamics in af- fective experience 816	121
I musicisti suonano bene insieme a tempo? Un nuovo Beat Alignment Test per valutare le abilità ritmiche nei bambini 821	121
Overview 1030	122
Introduzione 1033	122
Correlati Neuropsicologici della Navigazione Spaziale in Contesti Urbani: Una Ricerca Meta-Analitica di Studi di Neuroimmagine Funzionale 703	122
Towards Healthier Minds and Cities: Insights from Environmental Education, Emotion Regulation, and Urban Park Design 761	123
Il Piacere del Ritmo: l’Impatto della Sensibilità alla Ricompensa Musicale e della Comp- lessità dello Stimolo sull’Elaborazione del Ritmo 851	124
Rasch 2.0: A Linear Mixed-Effects Models approach to obtain Rasch-like estimates of accu- racies and response times from fully-crossed design data 600	125
Changes in heart rate to aesthetic chills predict emotional complexity 814	125
La navigazione spaziale: una panoramica sul suo sviluppo e sui programmi di potenzia- mento 751	126

Note in armonia, movimenti in sincronia: l'effetto della consonanza musicale sull'azione condivisa 871	127
Environmental effects on technostress and the role of the sense of self: a two-wave longitudinal survey in Italian university students 755	128
Decoding gut feelings: linking gastric activity to perceived emotional experience 891	128
Assessing Discriminant Validity in Clinical Psychology: Combining Exploratory Graph Analysis and Structural Equation Modeling 930	129
Modelli computazionali di navigazione urbana: Verso agenti cognitivamente complessi 793	130
Piacere musicale condiviso e sincronizzazione interpersonale: evidenze comportamentali e neurali da uno studio di hyperscanning fNIRS 880	131
The RestPod: Promoting Workplace Restoration through Biophilic Design and Physiological Stress Reduction 868	131
Soundscapes of Time: come la musica influenza la percezione del tempo 937	132
Virtual Reality Interventions for Mood Disorders: Exploring Heart Rate Variability Biofeedback and Time Perception Recalibration 942	133
An integrated game-based approach for assessing mathematical performance and related affective factors 581	133
Navigazione urbana e uso del GPS: il ruolo di fattori individuali e diverse modalità d'uso 856	134
Discussione generale 1020	135
Open discussion 1031	135
Discussion 1028	135
Open discussion 1039	135
Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science 555	135
Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia 684	136
The role of self-directed movement in the emergence of bodily-self representation: kinematic and EEG evidence in newborns 621	137
Memoria e azione: quali interazioni, quali confini? 490	138
I LLM sono dei buoni simulatori dei processi cognitivi? 944	138
Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences 979	139
Enactment, emozioni ed expertise motoria: quale impatto sulla memoria? 662	140
The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age 611	140

Introduction to Network analysis and the contents of the symposium 1018	141
Introduction 1042	141
Motor Cortex Excitability and Vaccine Hesitancy: A TMS Approach to Sensorimotor Responses 981	141
Il ruolo delle simulazioni sensomotorie nel potenziamento della memoria: quale tipologia è più efficace? 604	142
Problem solving nei Large Language Models 947	143
Understanding Meaning-Making in Daily Life Through Multilevel Network Psychometrics 680	144
Motor Development Supports the Emergence of Visual Body Representation in Infants 808 144	
Mirror, mirror on the screen: Influencing motor cortex excitability through action observation and Hebbian associative plasticity 972	145
Applicazioni di LLM alla psicomетria: dalla predizione di strutture fattoriali ai digital twins 844	146
Effetto dell'attività motoria congruente durante il recupero di concetti manipolabili 496 .	146
Personality architecture through healthy and pathological ageing 523	147
Sensing the body across the life-span: evidence from explicit and implicit components of bodily self-perception 720	148
TMS reveals the time course of the cerebellum and cerebellum-social brain causal connectivity during emotion discrimination 969	149
TOWARDS A NEW MEASURE OF COGNITIVE ABSTRACTION: LLM-ASSISTED DEVELOPMENT OF A NEW PSYCHOMETRIC INSTRUMENT 768	149
Simulazioni predittive dell'azione e distorsioni mnestiche: evidenze comportamentali e di neuromodulazione 762	150
Investigating Brain-Behavior Architecture Using Graph-Based Network Analysis: Preliminary Insights from Resting-State fMRI 551	151
Driving Hebbian plasticity in temporo-occipital back-projections improves visual perception of emotions 977	152
Il linguaggio silenzioso del corpo: il ruolo della postura nell'osservazione dell'azione 537	152
Body perception in healthy aging –insights from a Psychophysical and Computational Approach 698	153
LLMind to Enhance Diagnostic Decision-Making in Mental Health: Synergy Between AI Language Models and Clinical Expertise 897	154
Wrap up and final discussion 1019	155
Discussione aperta 1007	155

Open discussion 1036	155
Discussion 1043	155
Domande e discussione 1013	155
Promuovere trasparenza e rigore in psicologia: un framework inferenziale multiverse per la meta-analisi 663	155
Testing a Bifactor Exploratory Structural Equation Model (B-ESEM) of the Trait Emotional Intelligence Questionnaire Full-Form (TEIQue-FF) Across Countries 716	156
Meccanismi di controllo pro-attivo top-down nell'invecchiamento: l'effetto dell'aspettativa del distrattore in adulti giovani e anziani 736	157
Facing the Mafia in Virtual Reality: Shaping Attitudes, Inspiring Civic Action 727	157
Does Language Shape Numbers? Cross-Linguistic Insights from Vector-Space Models 854	158
Attachment anxiety and selective spatial attention: a behavioral and ERP investigation 754	159
Differenze individuali nella navigazione in ambienti reali: il ruolo delle rappresentazioni corporee interne ed esterne 748	159
TAP-COG: Preliminary validation of a tablet-based neuropsychological battery 733	160
Raccolta di evidenza empirica delle proprietà psicometriche dello Strumento di Osservazione del Potenziale Indire (SOPi) in un campione di docenti italiani. 676	161
Flipturns of Adolescent Swimmers Psychological (in)Flexibility: An Idiographic study with DNA-V 819	162
Verb-Noun-Adjective Interactions in Sensorimotor Integration During Language Processing 796	162
Stimolare il potenziale di apprendimento attraverso il problem-solving: primi dati di efficacia del programma SWIFT 815	163
Effetti dell'ascolto musicale su attenzione ed ansia: modulazione della P300 e dei tempi di reazione in un paradigma oddball 805	164
Specific hypnotizability-related EEG signatures of motor imagery 781	165
Effetti dell'Attribute Framing sull'accettazione di una tecnologia di body scanning: evidenze da uno studio sperimentale 637	165
The role of Task Set Inhibition in Cued and Voluntary Task Switching 743	166
Lo spazio del corpo e della navigazione in età adulta: un confronto tra giovani adulti e anziani sani 749	167
CORRELATI NEURONALI DEL COMPORTAMENTO DI AVVICINAMENTO (CLOSING-IN): UNO STUDIO FNIRS SU SOGGETTI SANI 864	167
Cognitive load and pain relief: a systematic review on the relationship between working memory and acute pain 773	168

Which Biomarker-Based Diagnostic Algorithm for Functional Motor Disorders? Investigating Motor, Exteroceptive, And Interoceptive Domains Through Artificial Intelligence Analysis 732	169
Shifting the Body Midline: The Impact of Visuomotor Illusions in Virtual Reality on Peripheral Autonomic Activity 918	170
Trust in AI Under Pressure: Effects of Cognitive Load and Content Domain 539	170
Numbers in the brain: How linguistic experience shapes the neural representation of numbers 810	171
Effetti dei meccanismi di orientamento attentivo e di programmazione motoria nell'attenzione visuospatiale 769	172
Benefits of Butterfly Tapping on Emotional Reactivity and State Anxiety: an ERP Study in University Students 829	172
Involvement of the mirror and the mentalizing system during self-directed and other-directed communicative intentions. An sLORETA study. 933	173
Promoting Open Science in Psychology: The Development of an Operational Checklist to Support Authors in Adopting Open Practices 753	174
SopravVivi con te stesso nell'era Smartphone 632	175
Step by Step into Nature: A Multiple Single-Case Study Exploring the Effect of Walking on Mood in Older Adults 738	175
Sensing belonging: the role of social touch in visually impaired children 767	176
FALSE MEMORIES AND AGING: A SYSTEMATIC REVIEW ON HEALTHY OLDER PEOPLE, MILD COGNITIVE IMPAIRMENT AND ALZHEIMER'S DESEASE 631	177
Asymmetries in Gender Processing: ERP Evidence from Subject-Verb Agreement 665	178
Training spatial orientation and cognitive maps: early results from a virtual tool 693	178
The Neurophysiological Correlates of Lie Detection: A Meta-Analysis of fMRI Studies with Selectivity Assessment Using Bayes Factor Modeling 715	179
Semantic Accent in Bicultural Bilinguals: Investigating Conceptual Representations through Lexical Processing 722	180
When Language Meets Technology: Does Sound-to-Spelling Consistency Influence How We Use Word Suggestions? 729	180
Stima e approssimazione nei giovani adulti: verso una misura ecologica delle abilità di calcolo 744	181
Hand Blink Reflex latency changes with age: Insights into physiological brainstem aging 752	182
Self as a pattern: An exploratory study within the Pettern Theory of Self framework 775	182
DIALOGO E MONOLOGO: EFFETTI SU COMPRESIONE, PENSIERO CRITICO E REVISIONE DELLE IDEE 780	183

Può la salienza percettiva prevalere sull'attribuzione di stereotipi di genere nei paradigmi di gaze-following behaviour? 782	184
Exploring thumb usage in mobile typing: a comparison between digital natives and immigrants 786	184
Serial dependence in a joint action context 795	185
Symbolic and non-symbolic numerical representations in elderly and young adults: an exploratory EEG study 797	186
Self-compassion e realtà virtuale nel supporto psicologico di atleti agonisti post-infortunio: un protocollo sperimentale 830	186
Exploring the Neurophysiological Impact of Alternating Bilateral Stimulation on Emotional Reactivity in University Students 831	187
Apprendimento (Trans)Formativo: Un Impact Game per la Metacognizione e la Mentalità di Crescita 835	188
ELABORARE OGGETTI AFFERRABILI ACCOPPIATI A MANI EGOCENTRICHE ATTIVA PROGRAMMI MOTORI DI AFFERRAMENTO 836	188
Associazione tra attività sportiva e abilità cognitive, emotive e sociali: uno studio longitudinale su adolescenti che praticano la pallavolo 887	189
Apprendere attraverso le interazioni sociali: il ruolo delle differenti componenti dell'attenzione nell'apprendimento osservativo 953	190
Regolazione emotiva e sonno: associazione tra tono affettivo e qualità del sonno nella vita quotidiana. 704	190
Implicit adaptation to unnatural visuomotor mapping in an immersive environment 763	191
From Action Goals to Social Interactions: Neural Dynamics of Intentionality Processing 750	192
Attentional processes in Parkinson's Disease: a meta-analysis 723	192
Superstitious Decision-Making Under Risk 760	193
Grasp planning influences the face inversion effect 841	194
Modulating Pain in Fibromyalgia: The Role of tDCS and Exercise therapy 731	194
Psychometric properties of the Workplace Ostracism Scale (WOS): New evidence from Item Response Theory and Differential Item Functioning (DIF) analyses 792	195
Neural speech tracking in young cochlear implanted adults 765	196
Do capuchin monkeys (Sapajus spp.) follow the gaze of conspecifics displayed on a screen? 712	197
The Role of Heart Rate Variability in Mild Cognitive Impairment 778	197
The use of AI to create visual stimuli in psychology 791	198

Women Have Taken the Trousers, but Men Still Avoid the Skirt: Neural Evidence for a Gender Stereotype Asymmetry 1001	198
New perspectives for developing short forms of tests 565	199
Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing 633	200
The interplay between sleep health and peripartum psychological health in the family context: a prospective psychophysiological approach 900	201
Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica 497	202
Introduction 1008	202
Measuring the Stability of Adaptive Psychological Assessment 913	202
Ageing as a Process of Adaptation and Evolution 514	203
Innovative approaches to sleep and well-being: Methodological and research implications 694	204
Moral Decision-Making in Real and Sacrificial Contexts: A Pilot Study on Social Cognition in Mild Cognitive Impairment 498	204
Typing on the Move: Touchscreen interaction as a Tool for Investigating Sensorimotor Behavior 653	205
Personality in healthy aging. Stereotypes and structural differences 534	206
The Dance of Thumbs: Kinematic signature of Digital Intentions 640	206
More than a short form: Using adaptive assessments to optimize clinical insight from the first session 575	207
The role of decision-making in syndromes characterized by chronic pain 934	208
Aging as Adaptive Reorganization: A Network Analysis of Psychological, Cognitive, and Personality Traits Across the Lifespan 515	208
Are eating worries and sleep quality associated in daily life? An exploratory ecological study 697	209
Shortening tests within competence-based knowledge space theory 572	210
Touching Intentions: Pressure and Duration as Behavioral Markers of Smartphone Typing Across Generations and Contexts 672	211
The Predictive Role of Cognitive Reserve in Adulthood and Aging 777	211
Il decision making emotivo e il Readiness Potential: evidenze EEG sui meccanismi pre-risposta 787	212
Exploring EEG Complexity in REM and NREM Sleep: Insights into Insomnia Disorder 801 213	

The dynamics of word production in smartphone writing: evidence for cascaded processing from kinematic data 719	214
Natural selection for items: Evaluating a genetic algorithm for developing questionnaire short forms 573	214
Motor Reserve and Current Physical Activity on Cognitive Performance, in elderly: Never too late to start exercise 525	215
Will the suffering ever end? An item response theory algorithm for shortening tests 566	216
REM Sleep Behavior Disorder as a unique window into degeneration: the role of sleep, dreaming, cognition and mood 529	216
Processi decisionali nelle valutazioni psicopatologico-forensi: analisi su 489 perizie italiane 650	217
From Graphemes to Movements: How Language and Motor Skills Shape Word Written Production 644	218
RF12: A Brief Tool for Identifying Modifiable Dementia Risk Factors in Healthy Adults 545	219
General Discussion 1010	219
Discussion 1027	219
General Discussion 1009	220
Discussione e domande 1021	220
Open Discussion 1040	220
The effect of posture and inter-manual distance on audio-tactile interaction: a developmental study 994	220
Neuropsychological Profiles, Sleep Disorders, and Behavioral Adaptation in Smith-Magenis Syndrome: Clinical Correlates and Rehabilitation Perspectives 915	221
Cognizione tecnologica: un modello neurocognitivo integrato 794	221
Il ruolo dell'empatia di tratto nel decision making morale: risultati di uno studio sui tratti di personalità borderline 560	222
Verso uno studio comparato della handedness nelle piante 811	223
L'espressione dell'osservatore influenza la percezione ma non la memoria di volti emotivi 758	224
Motor Response Execution and Confidence: Understanding Decisional Dynamics 493 . .	224
Cognitive, emotional-behavioral, and academic profiles of gifted youth in the digital age: toward a new digitised mind 916	225
Arousal and Time Perception: Unravelling the Effects of Negative Stimuli Through Pupilometry 561	226

Profiles of adolescent gamblers: Exploring the interplay of cognitive, personality, and emotional factors in problem gambling 638	226
BECOME: longitudinal impact of the COVID-19 pandemic on cognitive, emotional, and behavioral development in children and adolescents 922	227
La lateralità manuale nei primati non umani: ricerche sui cebi dai cornetti in laboratorio e in natura 710	228
Neuromodulating Moral Emotions: Effects of tVNS and tDCS on Gastric and Cardiac Rhythm, Disgust, and Dishonest Behavior 919	229
Sonno REM e processing emotivo: un'indagine fisiologica e comportamentale 521	229
Cognitive Biases in Human-AI Interaction: Psychological Implications for Explainable Artificial Intelligence 646	230
Daily Worry and Physiological Reactivity to Psychosocial Stress: An Experimental and Ecological Assessment on Stress Anticipation 606	231
Preparing to act follows Bayesian inference rules 899	231
Partial sleep deprivation effects on dual-task cognitive-motor performance 579	232
The interplay of life satisfaction and cognitive reserve: implications for cognitive change in old age. A population-based study 552	233
Framing the unthinkable: Individual differences in conspiracy beliefs around the Trump assassination attempt 757	233
From Faces to Feelings: The Role of Metacontrol in Empathic Accuracy within the Enface-ment Illusion 649	234
Testare l'effetto di protocolli intensivi di neuro-empowerment da remoto sul benessere psicofisico nel ciclo di vita 564	235
Investigating motor styles in the ACT2 kinematics framework 910	236
A home-based paradigm of phase-targeted auditory stimulation during human sleep. 741	236
Pensare per contrari facilita il processo di generazione e di verifica delle ipotesi nel compito di scoperta della regola di Wason 923	237
Revealing Oculomotor Tension Between Inhibition and Capture During Free Viewing 971	238
Interoceptive-Based Interventions for Eating Disorders 859	238
EARLY THETA ACTIVITY PRECEDING CORTICAL DOWN-STATES IS A CRUCIAL MODULATOR OF SLOW OSCILLATORY-SPINDLE DYNAMICS IN HUMAN NON-REM SLEEP 867	239
Rethinking Cognitive Reserve in fMRI research: a Meta-analytic investigation on the neural consistency of Proxy measures 645	240
Fiducia nell'IA generativa: l'influenza della lunghezza e dell'accuratezza delle risposte 746	240
Semantic Memory: A Multidimensional System Under Control 817	241

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione 702	242
PSICOMETRIA PER LA SALUTE E LA SOSTENIBILITA' 938	243
Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology 799	243
Introduzione 1011	244
Towards an Integrated Assessment of ADHD and ASD Traits in the General Population: Psychometric Applications and Clinical Implications 869	244
COMPRENDERE LA MENTE DEGLI ALTRI: EVIDENZE COMPORTAMENTALI, CLINICHE E NEUROSCIENTIFICHE 508	245
Il costo cognitivo della ruminazione: interferenza tra elaborazione emotiva e compiti esecutivi 652	245
Introduction 1034	246
The role of the cerebellum in mentalizing: a transcranial magnetic stimulation investigation 713	246
Multimodal priors reveal the structure of semantic memory 802	247
Assessing construct validity and reliability of the Benefit Finding Scale in people with multiple sclerosis and their caregivers 945	247
Correlati neurali e comportamentali dell'orientamento spaziale dell'attenzione in individui con sintomatologia ansioso-depressiva subclinica 896	248
The neurostructural bases of empathy: morphometric evidence for a multicomponential approach 518	249
Linking Corticospinal Excitability and EEG Motor Rhythms During Action Observation: Insights from an EEG-TMS Study 667	250
The multidimensionality of abstract concepts 820	251
Instruments measuring (health-related) quality of life in people with multiple sclerosis: a systematic review following COSMIN guidelines 511	251
Mu Rhythm Modulation during Action Recognition in Williams Syndrome: A Window into Atypical Social Cognition 513	252
Attention rehabilitation in depression: preliminary evidence on the effectiveness of ABM 826	253
On the Role of Posterior Connectivity in Learning and Exploiting Statistical Regularities: A Neuromodulation and EEG Study 837	254
Multidimensional abstract concepts in interactive tasks 809	255
Cerebellar predictive mechanisms in social cognition: a study on patients with cerebellar neurodegenerative disease. 528	255

Inferenza automatizzata del consumo problematico di alcol da social media tramite modelli linguistici di grandi dimensioni: validazione con misure self-report di consumo di alcol, personalità e benessere psicologico 857	256
Il ruolo gerarchico dell'osservatore influenza l'orientamento dell'attenzione verso i volti: evidenze da uno studio di eye-tracking 849	257
Divided Yet United: Mapping the Interplay of Semantic and Executive Control 806	257
Alpha oscillations causally support the integration of expectations in metacognitive confidence 890	258
Emotionally charged stimuli modulate interpersonal space regulation in ASD adolescents: a Virtual Reality study 997	259
Generazione Z e accettabilità della carne coltivata: profili di consumatori e mappe percettive di burger 688	260
Il ruolo delle emozioni nei bias attentivi e di memoria 888	260
Open discussion 1035	261
Domande e discussione 1012	261
Open discussion 1032	261
Isolating perceptual and post-perceptual activity thanks to iconic memory and a partial report paradigm 620	262
Socioeconomic Status and Academic Motivation: A Meta-Analysis and Systematic Review grounded on Self-Determination Theory 664	262
L'Italian Crowdsourcing Project: Tempi di riconoscimento visivo, accuratezza e prevalenza per 130.495 parole italiane 699	263
Validation study of the Italian version of Math Anxiety Questionnaire for Adults (MAQA) 988	264
Dal Rischio alla Risorsa: Una Riflessione Critica sull'Uso Trasformativo dei Videogiochi nella Salute Mentale 679	264
Il ruolo dei videogiochi per la promozione della qualità del sonno 683	265
Oltre i Confini del Corpo: Un'analisi comparativa delle rappresentazioni concettuali umane e dell'intelligenza artificiale 492	266
Il ruolo delle emozioni e dei fattori individuali in un compito di discriminazione percettiva. 839	266
Correlati magnetoencefalografici del controllo inibitorio in risposta al trauma: dalla resilienza al PTSD 855	267
Valutazione dell'Indice di Overlapping (η) tramite Simulazione: Un Confronto con gli Effect Size Tradizionali 642	268
L'elaborazione semantica in parafovea durante la lettura. Evidenze da studi comportamentali. 550	268

Early-life influences on the ability to cope with later stress, adversity, and trauma –A systematic review of original studies in humans and animal models. 872	269
From Overfactoring to Structural Clarity: Applying Random Intercept Item Factor Analysis (RIIFA) to Improve Dimensionality Estimation 714	270
Giochi e videogiochi ad alte richieste cognitive: motivazioni, correlati ed effetti 690 . . .	270
The Touch of Sight: Inter-Subject Correlation Unveils crossmodal Convergence in the human brain 870	271
The Impact of Verbal Conditioning and Visual Exposure on Body Perceived Position 785 .	272
Elaborazione emotiva implicita ed esplicita con volti ibridi: un single case di una paziente con lesione capsulo-talamica destra 984	273
THE EFFECTS OF IMMERSIVE VIRTUAL REALITY TRAINING ON PERCEPTUAL-COGNITIVE SKILLS IN HEALTHY ATHLETES: A SYSTEMATIC REVIEW ON SPORTS PERFORMANCE ENHANCEMENT 602	273
Da H1 a H0: La lingua straniera non riduce l'illusione di causalità 591	274
New Measures of Reliability in Knowledge Space Theory 895	275
Presenting the SMILE Visual (SMILE-V): Preliminary validity evidence of a self-report instrument to measure meaning in life with visual stimuli 681	276
Oscillatory Signatures of Prior Learning: Dissociable Roles of Theta and Alpha Oscillations in Strategy Acquisition and Exploitation 655	276
Specific Learning Disabilities and Associated Emotional-Motivational Profiles: A Study in Italian University Students 991	277
Telemedicine Acceptance in Rural Settings: A Systematic Review of Definitions, Methods, and Measurement Practices 901	278
Exploring ChatGPT's Communication Behaviour in Healthcare Interactions: a Psycholinguistic Perspective 592	278
An early phase advantage in dynamic emotion recognition for gifted children? Evidence from an Italian sample. 661	279
Metodi partecipativi: ibridazione metodologica per la ricerca tecno-scientifica inclusiva 725	280
Qualità di vita fisica e mentale post-COVID-19: uno studio su profili latenti e fattori predittivi 627	281
Adapting predictions: Investigating the role of speech adaptation in predictive processing using Temporal Response Function 615	281
Quando l'immagine rigenera: il ruolo degli elementi strutturali basici della scena (BSE) nei paesaggi naturali 612	282
Robust approaches in threat perception and vulnerability assessment for cyber social security 842	282

Social support regulates vigilance to threat: Evidence from startle reactivity during emotional stress induction 668	283
Quando la lingua straniera non basta per ridurre il bias implicito di genere 628	284
UNDERSTANDING LONELINESS THROUGH PERSONALITY: IMPLICATIONS FOR SOCIAL AND PSYCHOLOGICAL WELL-BEING 717	284
Charting plastic dynamics triggered by progressive vision loss: electrophysiological evidence from SSVEPs and TMS-EEG 756	285
Dyslexia in Higher Education: Specific and Global Components of the Reading Profile 721	286
Intelligenza emotiva: un contributo italiano nel dibattito sullo studio delle proprietà psicometriche della scala EIS 924	287
Aumento di peso e immagine corporea nella schizofrenia: revisione sistematica e meta-sintesi della letteratura 766	287
Dynamic Interplay between Visual Attention and Motor Control in FPS Gaming 798 . . .	288
When less is (sometimes) more. Evaluating the effect of trial number in classical experimental psychology paradigms. 850	289
Una versione per bambini del Barcelona Music Reward Questionnaire 654	289
Attivare esperienze trasformative: quale contributo della realtà virtuale? 779	290
Emotion and Time Shape Attentional Engagement: ERP Correlates from a Dot-Probe Task 823	291
Yoga and Young Adults: A Systematic Review on Cognitive and Emotional Outcomes 886	291
From Features to Goals: Shaping Food Utility Through Shared Features and Goal-Directed Inference 568	292
The influence of spatial encoding on the fate of sensory memory representations unselected by the (retro-)cue 853	293
Pupillometric signature of implicit learning of statistical regularities 858	294
Is that my body? The influence of body size and body appreciation on the sense of ownership over a virtual body 883	294
Photodiode-based triggering system for reliable ERPs recording in visuomotor tasks 940 .	295
Physiological and psychological markers of recovery after high-intensity anaerobic exercise: Preliminary evidence from a multi-country study 951	296
Descrizioni di percorsi: i suoni naturali possono fare la differenza nella formazione delle rappresentazioni? 960	296
Are electromagnetic hypersensitivity and fibromyalgia actually a small fiber neuropathy? A preliminary study 996	297
Spatial associations of losses and gains: Evidence of a SNARC-like effect of valence in a magnitude classification task 860	298

Beyond Forgetting: The Role of Attentional Dynamics in Sustaining Memory for Naturalistic Environments 973	298
The relationship between sensorimotor synchronization and attentional sensitivity to perceptual violations 848	299
Reshaping Self–Other Representation: The Effect of Compassion Meditation on Peripersonal Space 873	300
Sensorimotor Reactivity to COVID-19 Vaccination: A TMS Study on Vaccine Hesitancy 902	300
Grasp-compatibility effects for object names do not differ between singular and plural forms 861	301
From healthy ageing to mild cognitive impairment: The role of executive functions 903 .	302
The Role of Beta Oscillations in Mental Time Travel, Intertemporal Choice and Prospective Memory: A tACS Study 974	303
Clinical Validity and Utility of Fully Idiographic Network Analysis: A Study of Clinician-Patient Dyads 865	303
UN'INDAGINE SULL'INTERAZIONE TRA STATO D'USO DEGLI OGGETTI E PERICOLOSITA' PERCEPITA 879	304
Lo sviluppo della Memoria Autobiografica Episodica in età prescolare: evidenze da uno studio longitudinale 852	305
Facial expression analysis of implicit aesthetic processing 982	305
Frail elderly people' impaired anticipatory cognitive brain processing 840	306
Impatto della riserva cognitiva sulle funzioni esecutive e sul rendimento accademico degli studenti universitari digitali 956	307
Implicit Acquisition of Orthographic Regularities in Italian Children: A Longitudinal Study of Reading, Writing, and Orthographic Judgement 804	308
Correlations between olfactory and gustatory function and cognitive abilities in the elderly: a preliminary study 838	308
Does REM sleep Fragmentation affect micro- and macro-structure features of Slow Wave Sleep? 813	309
La codifica visiva di strumenti familiari e non familiari 993	310
Age-related shifts in retrieval strategies modulated by conceptual interference in long-term visual memory 807	310
Effector-Independent Sources of Variability in Upper and Lower Limb Gestures 936 . . .	311
Il ruolo dell'esecuzione musicale espressiva vs meccanica su piacere e voglia di muoversi 833	312
A Novel Eye-Tracking Approach to Cognitive Screening in Parkinson's Disease 995 . . .	312

How temporal summation of second pain develops along trials, trains and across concomitant tactile stimulations 925	313
Titolo: Modulazione esogena della frequenza cardiaca e dello stato psicofisiologico 866 .	314
The Silent Guide: How Inner Speech Shapes New Action Learning and Performance 939 .	315
Clinimetrics: Toward a Diagnostic Neuropsychology 772	315
Validazione italiana del "Depression, Anxiety and Stress Scales (DASS)" in adulti anziani 992	316
Creativity and Cognitive Health: Divergent Thinking in the Context of Successful Aging 825	317
Preliminary steps for the validation of a multidimensional scale for assessing perceived value of citizens on public spaces 832	317
Analisi semantica degli item tramite gli embedding dei Large Language Models per la predizione della struttura fattoriale a priori nei test psicometrici 834	318
Profiling Risk Disposition Through Psychophysiological Insights: A New Digital Task 966	319
Offline states and memory retention of true and false memories 507	319
Implicit and emotional responses to mortality in Sufi meditators: evidence from affective misattribution and death-thought accessibility tasks 955	320
FLESSIBILITÀ PSICOLOGICA, COMPORTAMENTI A RISCHIO E ONESTÀ ACCADEMICA: UN'ANALISI TRA GLI STUDENTI UNIVERSITARI 962	321
Vocal Markers in Aviation of Workload, Stress, Fatigue, and Sleepiness: A Protocol Validation Study 889	321
Risposte Esplicite e Implicite ai Volti Infantili: Effetti sul Comportamento di Cura in uno Studio con Simulatore Infantile 824	322
The Cognitive Functioning Instrument: a new cut-off value for subjective cognitive decline 904	323
"Era meglio ai nostri tempi": la relazione tra salute percepita e benessere soggettivo nelle diverse generazioni 894	323
Treating Temporal Disorders in Spatial Neglect Using Virtual Reality and Prismatic Adaptation 911	324
Nature and Music Videos Promote Recovery from Induced Stress 935	325
Embodied minds in a digital age: environmental influences on neurocognition, personality, and psychopathology 958	325
Incontrare la parte compassionevole: uno studio online su self-compassion, rilassamento e differenze individuali 968	326
Reaching e grasping di oggetti nella Realtà Fisica e in Mixed Reality: un'analisi cinematica ed elettromiografica 964	327
Parallel semantic reading of multiple words in aging 963	328

VALUTAZIONE PSICOLOGICA DEL BENESSERE NEGLI STUDENTI UNIVERSITARI: IL RUOLO DELLA REGOLAZIONE EMOTIVA 976	329
IL RUOLO DELLA rTPJ NELLA PRESA DI DECISIONE SOCIALE: EVIDENZE DA UNO STUDIO TMS 863	329
Representational Momentum reveals the joint contribution of context and kinematics to action representation 952	330
"Exploring the Relationship Between Sexual Orientation and Moral Reasoning" 929 . . .	331
What am I grasping? Deepening cortical and corticospinal spatiotemporal dynamics underlying grasping observation 946	331
The positive effect of preserved cognition in subjective cognitive decline: a longitudinal study 906	332
Effetti del bias additivo nei processi di immaginazione mentale 893	333
Bayesian Methods for Network Modeling in Psychological Research 1000	333
Sex differences in episodic memory for public events: a male advantage? 629	334
Decision-making and stress in Isolated and Confined Environments: findings and insights from systematic investigations in spaceflight analogs 926	335
Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science 884	336
Old and new perspectives on the study of human memory 578	336
Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile 671	337
Pensiero ripetitivo negativo: validazione italiana di due strumenti per la misurazione di un processo transdiagnostico. 630	338
Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia 648	339
The Psychology of Space Exploration and Extreme Environments 921	339
Allenare mente e corpo: il contributo della tecnologia mobile per un invecchiamento sano, attivo e sicuro 677	340
Saluti e apertura 1037	341
Renewing the Traditional: Updated and Openly Available Normative Data of the Montreal Cognitive Assessment (MoCA; version 8.1) 948	341
Age differences in the appraisal of past and future transitional events: evidence from the transitional impact scale and linguistic analyses 660	342
Mettersi comodi e viaggiare: simulazioni di ambienti naturali e museali per il benessere nella terza età 675	343

Long-term solo sailing as an analogue for deep-space missions: Insights from the Global Solo Challenge. 931	343
Transcranial direct current stimulation over the orbitofrontal cortex improves confidence but impairs metacognitive sensitivity during a custom-made perceptual decision-making task 647	344
Enhancing Assessment Practices: A Validation Study of a Novel Phonological Short-Term Memory Task 961	345
How morality shapes our memory: a cross-cultural study on past and future (im)moral actions 597	346
Prosopagnosia: the Italian validation of a novel comprehensive assessment battery 874 .	346
INVECCHIAMENTO ATTIVO E SOLITUDINE: UNA SFIDA BIO-PSICO-SOCIO-DIGITALE 764	347
Modulare il Delay Discounting tramite interventi di stimolazione neuronale non-invasiva 659	348
COGNITIVE AND PHYSICAL FATIGUE INDUCED BY MILITARY OPERATIONS IN ISOLATED AND COLD ENVIRONMENT (ICE) 957	349
“Phantom echoes”: The role of acoustic and linguistic similarity in false memories as assessed by the DRM Paradigm 595	349
Digital Cognitive Screening Tools to Bridge Linguistic and Cultural Gaps 898	350
Tecnologia embodied e intelligenza artificiale a supporto della prevenzione del declino cognitivo: il progetto E-Move 685	351
Combinare stimolazione transcranica a corrente continua con un intervento psicoterapeutico: evidenze da due campioni sperimentali 827	351
Cognitive changes induced by microgravity during parabolic flights 950	352
False memories from nowhere: humans falsely recognize words that are not attested in their vocabulary 576	353
The Advent of Digital Assessment Tools: A New Era in Neuropsychological Evaluation 914	354
Discussione e conclusioni 1046	355
Question time 1029	355
Questions and Discussion 1045	355
Open discussion e chiusura 1038	355
Open Discussion 1041	355
Emotional Well-Being and Academic Self-Efficacy in Adolescents: The Role of Socioeconomic Status 510	355
A TMS investigation of the causal role of STS and the cerebellum in the gaze cueing task 635	356

PhD prize / 1002**THE NEURAL BASES OF PREDICTIVE STYLES ALONG THE AUTISM-SCHIZOPHRENIA CONTINUUM****Corresponding Author:** luca.tarasi2@unibo.it

This thesis delineates the core rhythmic dynamics by which neural oscillations orchestrate Bayesian inference and drive perceptual decision-making. Across six rigorously designed, multi-method experiments combining behavioral analysis, psychometric assessment, and EEG measures with state-of-the-art computational modeling, this research identifies specific oscillatory signatures of human predictive ability and demonstrates how these rhythms are differentially altered along the autism-schizophrenia continuum.

The primary contribution is the development of a novel, unified bio-behavioral model that positions Autism Spectrum Disorder (ASD) and Schizophrenia Spectrum Disorder (SSD) at opposing poles of a single continuum of predictive dysfunction: ASD is characterized by hyperactive bottom-up signaling, whereas SSD is typified by exaggerated top-down modulation. This novel framework refines and broadens current models of predictive dysfunction across both ASD and SSD.

The work is organized around three principal objectives:

1. Brain connectivity: Mapping neural communication profiles to characterize the circuits underlying perceptual inference and to assess disruptions in brain-network pathways associated with autistic and schizotypal traits.
2. Mapping predictive-coding decision strategies: Characterizing the behavioral and electrophysiological mechanisms by which prior knowledge and beliefs shape perceptual choices, thereby integrating theoretical predictions with neurophysiological evidence.
3. Individual differences: Examining how dispositional variations in ASD and SSD traits shape predictive strategies in both tightly controlled tasks and ecologically valid settings.

By combining theoretical constructs with empirical data, this thesis enhances methodological rigor in perceptual-inference research. It also identifies oscillatory markers of predictive dysfunction within a unified bio-behavioral framework, clarifying how neural rhythms influence cognitive function along a continuum from neurotypical individuals to those with elevated autistic or schizotypal traits. These findings provide a clear foundation for refining experimental designs and exploring neuromodulatory or behavioral interventions, contributing to ongoing efforts toward personalized diagnostic and therapeutic approaches.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

PhD prize / 1003**From memory to identity: the impact of mild cognitive impairment on autobiographical memory and its implications for clinical practice and research****Corresponding Author:** giulia.marselli@uniroma1.it

The research presented in this thesis emerges during a time of profound global focus on ageing, as the United Nations General Assembly has proclaimed the years 2021 to 2030 the UN Decade of Healthy Ageing. Within this framework, healthcare systems are increasingly called upon to offer timely support and resources for the early management of age-related conditions.

Past autobiographical memories hold deep significance for older adults and their caregivers. These memories are intricately tied to personal identity, emotional well-being, mood regulation, social engagement, and cognitive abilities such as problem-solving.

On one hand, when considering typical ageing, research has shown a gradual decline in autobiographical memory, with the episodic component being more affected than the semantic one—an effect that generally becomes noticeable after the age of 60. On the other hand, in the context of pathological ageing, while extensive research has explored how Alzheimer's disease affects autobiographical memory, its influence in earlier, subtler forms of cognitive decline—such as Mild Cognitive Impairment (MCI)—remains a matter of ongoing inquiry.

This thesis seeks to explore the functioning of autobiographical memory across both typical and pathological ageing. To this end, the work is structured into five chapters. The first two chapters provide a theoretical and bibliographic foundation, examining key models and concepts related to MCI and autobiographical memory. The third chapter presents a systematic review of the literature aiming to analyze the functioning of autobiographical memory in patients with MCI. The fourth chapter illustrates the attempt to revise a new instrument for assessing autobiographical memory in the Italian population—the Autobiographical Memory of the Self (Memoria Autobiografica del Sé; MA-SELF). Finally, the fifth chapter introduces an empirical study designed to evaluate the MA-SELF's ability to discriminate between individuals with normal cognitive profiles and those with MCI.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

PhD prize / 1004

Exploring the Psychometric Dimensions: Theoretical and Practical Applications of Artificial Intelligence and Gamification in Education, Learning, and Neuropsychological Assessment

Negli ultimi decenni, l'intersezione tra Intelligenza Artificiale (IA) e gamification ha profondamente trasformato i settori dell'istruzione, dell'apprendimento e della valutazione neuropsicologica. La presente tesi, intitolata "Exploring the Psychometric Dimensions: Theoretical and Practical Applications of Artificial Intelligence and Gamification in Education, Learning, and Neuropsychological Assessment", si propone di analizzare le fondamenta teoriche e le applicazioni pratiche di questa integrazione, adottando una prospettiva psicometrica. L'obiettivo è esplorare come l'unione tra algoritmi di apprendimento automatico e principi di game design possa arricchire i metodi pedagogici tradizionali, offrendo esperienze formative personalizzate in grado di incrementare coinvolgimento e motivazione. In ambito neuropsicologico, tale integrazione propone approcci innovativi per la valutazione delle funzioni cognitive, migliorando la precisione delle misurazioni e la partecipazione degli utenti.

La presente dissertazione presenta una strutturazione in tre sezioni principali. La Parte I, "Contributi teorici", esplora il modo in cui l'IA influenza lo sviluppo umano e le competenze essenziali nell'istruzione esaminando, inoltre, le conoscenze e i vincoli della gamification applicata all'ambito educativo. La Parte II, "Applicazioni alla valutazione neuropsicologica e alla psicometria", approfondisce l'uso del machine learning e del deep learning nella stima dell'eterogeneità cognitiva nella popolazione scolastica, evidenziando punti di forza e limiti di questi approcci rispetto a tecniche lineari standard. Viene inoltre presentato un approccio innovativo per la validazione psicometrica di questionari, basato su tecniche di machine learning e teoria dell'informazione. Infine, la Parte III, "Applicazioni nel training", si concentra sull'integrazione tra IA e modelli psicometrici, in particolare l'Item Response Theory (IRT), per sviluppare sistemi di raccomandazione orientati agli obiettivi specifici dello studente.

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posium?:

PhD prize / 1005

Comparison of Hypothetical Options by Investigating Choices in Emotional Scenarios (CHOICES)

Gli esseri umani si affidano a principi morali per orientare molti dei loro giudizi e delle loro scelte quotidiane. Tuttavia, tali principi non sono universali: possono variare da individuo a individuo e, talvolta, entrare in conflitto, generando risposte diverse anche di fronte a situazioni simili. È frequente, infatti, imbattersi in dilemmi morali, ossia situazioni complesse in cui due o più valori percepiti come fondamentali si contrappongono, rendendo difficile stabilire quale sia l'azione più giusta da intraprendere.

Questa tesi si apre con un inquadramento teorico e si sviluppa attraverso una serie di studi empirici che, adottando varianti di dilemmi morali, mirano a esplorare alcuni meccanismi del decision-making morale ancora poco approfonditi nella letteratura. In particolare, mediante l'impiego di scenari sacrificali interattivi, è stato analizzato il ruolo della prossimità fisica, ipotizzando che una maggiore vicinanza percepita tra il decisore e la potenziale vittima di un'azione lesiva (pur finalizzata al bene collettivo) intensifichi il coinvolgimento emotivo e influenzi in modo significativo la scelta. Un secondo focus ha riguardato l'effetto dell'elevata empatia affettiva sul processo decisionale, in un panorama scientifico che finora ha posto maggiore attenzione agli effetti della sua riduzione. Infine, il decision-making morale è stato esaminato in un campione di soggetti vulnerabili, collocati in una fase di transizione tra salute e patologia, considerando il valore sociale della moralità. In ambito grupppale, infatti, i comportamenti percepiti come devianti rispetto alle norme condivise possono generare esclusione sociale, con ricadute psicologiche e cognitive, soprattutto per chi trae beneficio dal coinvolgimento attivo nelle relazioni sociali.

Questo lavoro intende mettere in luce la centralità del decision-making morale non solo come oggetto di indagine scientifica, ma anche come competenza essenziale per la vita quotidiana. Promuove inoltre una riflessione ampia e multidimensionale su un aspetto cruciale dell'esperienza umana, offrendo spunti per futuri sviluppi teorici e applicativi in contesti diversi.

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PhD prize / 1006

Dissecting the Sense of Agency: Integrating Sensorimotor and Cognitive Cues Across Different Experimental Paradigms

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The sense of agency refers to the subjective awareness of controlling one's actions and their effects on the environment. This experience comprises two distinct dimensions: the explicit metacognitive judgment of agency and the implicit sensorimotor feeling of agency.

Different neurocognitive models have been proposed to explain how the agency experience arises, varying in the weight assigned to low-level (sensorimotor, proprioceptive, exteroceptive) and high-level (cognitive) cues.

To test these models, I designed four experiments to disentangle the contributions of different cues to the two dimensions of agency. Participants (total N=240) were engaged in an ecologically valid task - switching a lightbulb on, either actively or passively - while both explicit and implicit indices

of agency were measured.

First, I examined the influence of cues rooted in bodily and sensorimotor processing by studying how the agency experience is influenced by (i) ageing-related changes in sensorimotor processing (Study 1), (ii) manipulations of the coherence of sensorimotor feedback in virtual environments (Study 2), and (iii) variations in the spatial distance between actions and their outcomes (Study 3). Finally, I explored the role of high-level contextual and social cues by varying the presence of another agent and nature of interaction (Study 4).

Beyond the specific findings of each study, two overarching insights emerge. First, the implicit and explicit dimensions of agency can dissociate, indicating that they rely on distinct cognitive processes at different stages of the motor hierarchy. Second, the results challenge the rigid dichotomy between low- and high-level cues as uniquely influencing either implicit or explicit agency. Instead, they highlight a dynamic interplay between sensorimotor and cognitive information, which jointly shape the experience of agency in a context-dependent manner.

Building on these insights, I propose a novel neurocognitive model of agency that captures this flexible integration, offering a coherent theoretical framework for future research on this complex phenomenon.

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Senso di responsabilità: quando l'azione si fa coscienza / 770

Senso di responsabilità: quando l'azione si fa coscienza

Authors: Althea Frisanco¹; Emanuela Pizzolla²; Giulio Piperno³; Marika Mariano⁴

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Il senso di responsabilità è un costrutto fondamentale nella vita individuale e sociale, che implica la capacità di monitorare, valutare e giustificare le proprie azioni e le loro conseguenze. In questo simposio vengono presentati approcci e risultati che affrontano il tema della responsabilità da una prospettiva multilivello, esplorando i processi sensori-motori, cognitivi e morali che lo sostengono. A partire dai meccanismi sensori-motori, gli studi sulla fatica –patologica o transitoria –e sull'attenzione sensoriale mostrano come l'esperienza soggettiva dello sforzo influenzi il controllo motorio e la percezione di causalità e responsabilità rispetto alle proprie azioni. Oltre il dominio sensori-motorio, si esplora l'impatto di segnali contestuali - come la prossimità fisica rispetto agli esiti dell'azione, la coordinazione interpersonale e l'embodiment di avatar virtuali - nel plasmare il senso di agentività e responsabilità. Successivamente, si esplora come il senso di agentività costituisca la base per il comportamento e le decisioni morali. In particolare, si indaga come il senso di agentività condiviso vari in funzione della natura prosociale o antisociale delle azioni collettive e in funzione del fatto che tali azioni siano orientate o meno al beneficio del proprio gruppo di appartenenza. Infine, si discute di come l'assunzione di identità moralmente rilevanti, come quella di un agente divino, possa trasformare il giudizio morale e le risposte emotive in contesti dilemmatici. Nel complesso, il simposio propone un quadro integrato e innovativo del senso di responsabilità, articolato dai livelli sensori-motori fino alle dinamiche psicosociali, attraverso approcci sperimentali e teorici di matrice neuroscientifica, psicologica e filosofica.

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Senso di responsabilità: quando l'azione si fa coscienza

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Yes

Neural signatures of complex and real-life memories / 818

Neural signatures of complex and real-life memories

Author: Annalisa Tosoni¹

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Recent advances in cognitive neuroscience increasingly focus on how memory functions in response to rich, temporally extended experiences that approximate the complexity and continuity of everyday life. This symposium brings together recent EEG and fMRI studies investigating the neural correlates of episodic and semantic memory using ecologically grounded paradigms and stimuli, including naturalistic scenes, autobiographical recollections, and structured narratives such as films and television series.

The featured contributions converge on a central question: how does the brain support memory for complex, real-world-like stimuli and events embedded in meaningful contexts?

One study examines the recognition of naturalistic visual scenes, highlighting how object-context congruence shapes memory encoding and retrieval. Another investigates the retrieval of autobiographical experiences, shedding light on the neural dynamics underlying the vivid re-experiencing of emotionally and temporally salient events. A third explores how the brain represents different types of episodic content—spatial layouts, object and character details, temporal sequences, and dialogues—elicited by narrative stimuli. Further contributions explore how the brain encodes the temporal structure of events and how semantic networks are formed and generalized through repeated exposure to structured narratives, such as films and tv-series.

By integrating spatially and temporally resolved neural data, these studies provide insight into how distributed brain systems support the encoding, retrieval, and organization of memory in contexts that closely resemble real-life experience. Together, they advance our understanding of memory as a dynamic, multidimensional, and context-sensitive process, and offer methodological innovations for studying memory in settings that reflect the richness of everyday human experience.

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Neural signatures of complex and real-life memories

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Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline / 686

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline

Author: Giuseppe Forte^{None}

Co-author: Ilaria Corbo¹

¹ *Sapienza, University of Rome*

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Cognitive decline, which can manifest as memory loss, attention difficulties, and reduced executive function, represents a significant challenge for aging populations. While traditional cognitive interventions have focused primarily on mental processes, recent research highlights the importance of integrating cognitive and bodily stimulation to address this complex issue. A growing body of evidence suggests that engaging the body through spatial awareness, sensory experiences, and interoception can significantly enhance cognitive function and slow down cognitive deterioration. This symposium will explore the latest findings in the field of cognitive decline, beginning with a systematic review of current cognitive stimulation strategies and presenting an empirical contribution. Then, the focus will be switch to the body highlighting how bodily factors such as spatial perception and interoception can contribute to cognitive rehabilitation and better functional outcomes. Special attention will be given to emerging therapeutic techniques like transcutaneous auricular vagus nerve stimulation (taVNS), which targets interoception and has shown promise in modulating cognitive processes and emotional regulation. By combining theoretical insights with practical interventions, this symposium will present integrated approaches that involve cognition, the body, and internal signals. These multimodal strategies offer new pathways to improve cognitive function and quality of life for individuals experiencing cognitive decline while also delaying the progression to more severe stages of neurodegenerative conditions

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Psicologia dell'arte e neuroestetica / 701

Psicologia dell'arte e neuroestetica

Authors: Rossana Actis Grosso¹; Stefano Mastandrea²

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² *Università Roma Tre*

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Il titolo del simposio, Psicologia dell'arte e neuroestetica, è lo stesso che dà il nome al gruppo tematico AIP, costituitosi nel 2022, che raccoglie studiosi italiani che lavorano su diversi temi propri della psicologia dell'arte e dell'estetica empirica (arte-visiva, musica, danza ecc.) utilizzando approcci e paradigmi di ricerca differenti. Il gruppo tematico e quindi il simposio hanno lo scopo di favorire la conoscenza e lo scambio di idee fra gli psicologi interessati a questi argomenti. È in questa ottica che il simposio si snoda: si inizia con un tema classico come la simmetria, con uno studio che indaga come questo elemento compositivo possa influenzare i giudizi estetici di diverse categorie di oggetti, da figure geometriche a volti umani. Si prosegue con una proposta inerente un nuovo modello dell'estetica del linguaggio, basato sui risultati della psico-neuro-linguistica e sulla più recente linguistica computazionale. Successivamente, l'importanza di un approccio integrato nella comprensione dell'arte, che tenga conto, sia delle ipotesi del ricercatore sugli aspetti formali dell'opera, sia di una corretta indagine storico-artistica. Si conclude con due studi che confrontano l'esperienza dei fruitori in diversi contesti: il primo confronta la fruizione di opere in un contesto geografico e uno culturale (in particolare la copia del Sarcofago degli Sposi nella necropoli di Cerveteri con l'originale al Museo Nazionale Etrusco di Villa Giulia), il secondo affronta il tema più generale "arte, benessere ed esperienza estetica", mettendo a confronto due diverse modalità di visita (con discussione e libera) svoltesi alla Galleria Nazionale d'Arte Moderna e Contemporanea di Roma.

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Psicologia dell'arte e neuroestetica / 771

Preferenza esplicita e implicita per la simmetria in diverse categorie di oggetti

Author: Marco Roccato¹

Co-authors: Giulio Contemori¹; Gianluca Campana¹; Marco Bertamini¹

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Introduzione. È noto che la simmetria influenzi i giudizi estetici. Abbiamo indagato se la sua influenza sulla preferenza estetica sia generalizzata o se invece vari fra diverse categorie di oggetti: forme angolari, forme curve, paesaggi, paesaggi offuscati tramite filtri, fiori, volti femminili e volti maschili. Un'ipotesi è che la simmetria contribuisca alla bellezza di un oggetto (es. fiore), ma non invece alla bellezza di configurazioni di oggetti (es. paesaggio).

Metodo. Le immagini sono state manipolate per ottenere una simmetria bilaterale perfetta, producendo una versione originale e una simmetrica. I partecipanti hanno espresso valutazioni esplicite per bellezza e salienza della simmetria tramite una scala analogica. Successivamente, le preferenze implicite sono state misurate usando un Test di Associazione Implicita (IAT), richiedente la categorizzazione di immagini e parole secondo la loro simmetria o valenza semantica.

Risultati. Le valutazioni esplicite hanno confermato che la simmetria produce preferenza per oggetti, ma non per configurazioni di oggetti. Al contrario, le misure implicite ottenute tramite IAT hanno rivelato un'associazione positiva con la simmetria in tutte le categorie testate, suggerendo una dissociazione tra preferenze esplicite e implicite.

Conclusioni. Questi risultati suggeriscono che la preferenza per la simmetria è influenzata dal contesto e interagisce in modo complesso con fattori come la fluency percettiva e la familiarità. Sebbene la simmetria sia generalmente preferita a livello implicito, la sua valutazione esplicita varia tra le categorie, probabilmente a causa di aspettative, familiarità, plausibilità ecologica e prototipicità.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia dell'arte e neuroestetica

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I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia / 747

I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia

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La traslazione in medicina, o medicina traslazionale, è un approccio che facilita il trasferimento rapido delle scoperte scientifiche dalla ricerca di base alla pratica clinica, e viceversa. Nell'ambito delle neuroscienze cliniche questo tipo di approccio richiede un processo di 'decostruzione' della condizione patologica in dimensioni psicologiche specifiche da manipolare sperimentalmente in laboratorio e una successiva 'ricostruzione' della fisiopatologia implicata. La ricerca sperimentale in Psicologia, attraverso l'utilizzo dei modelli animali, è in grado di identificare gli effetti di fattori di rischio psico-patogenico su diverse dimensioni psicologiche e di verificare l'efficacia di interventi terapeutici di vario tipo sia a livello comportamentale che fisiologico.

Il simposio si propone di offrire una panoramica sui contributi della ricerca italiana in questo campo

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Neural signatures of complex and real-life memories / 1016

Introduzione

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline / 689

Interoceptive Awareness as a Moderator of Cognitive and Autonomic Effects of taVNS in Healthy Adults

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In recent years, researchers in cognitive enhancement and rehabilitation have increasingly focused on neurostimulation techniques, aiming to develop effective methods that are minimally invasive and associated with few side effects. In this context, transcutaneous auricular vagus nerve stimulation (taVNS) has gained growing attention for its potential benefits on cognitive functions in both healthy individuals and those with cognitive impairment. Systematic reviews have reported mild positive effects of taVNS on cognitive performance, particularly on executive functions, although heterogeneity in methods, stimulation parameters, and outcomes has been observed.

Given the role of taVNS in modulating autonomic responses through specific neuroanatomical pathways, identifying factors that can predict stimulation efficacy remains crucial for protocol standardization. Due to its intrinsic nature, taVNS invites a deeper investigation of the body-brain interaction. If the vagus nerve acts as an indirect bodily channel influencing cognitive functions, interoceptive awareness—the ability to perceive and interpret internal bodily sensations—may represent a key moderating factor. According to the neurovisceral integration model, better interoceptive abilities could facilitate more adaptive autonomic responses and, consequently, stronger cognitive effects during taVNS.

This contribution presents preliminary empirical evidence from a within-subject study involving healthy adults categorized as good or poor interoceptors using the Multidimensional Assessment of Interoceptive Awareness. Participants underwent both sham and active taVNS sessions, with heart rate variability and cognitive performance indices assessed. The findings suggest differential autonomic and cognitive patterns based on interoceptive abilities, offering promising insights for developing targeted neurostimulation interventions in populations with cognitive decline, such as individuals with Mild Cognitive Impairment.

If you're submitting a symposium talk, what's the symposium title?:

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline

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No

I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia / 1022

Introduzione

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Senso di responsabilità: quando l'azione si fa coscienza / 1023

Introduzione

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Neural signatures of complex and real-life memories / 828

Aging does not impair neural sensitivity to extrafoveal contextual violations

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Objects semantically inconsistent with their surrounding scene typically attract attention (i.e., looked at earlier and for longer) and elicit a fronto-central N400 response, reflecting the cognitive effort to resolve contextual mismatches. Yet, it remains unresolved how much semantic information can be extracted before direct fixation, and whether similar extrafoveal processing mechanisms are preserved in aging.

In this study, eye-tracking and EEG data were simultaneously recorded while younger (N = 22) and healthy older (N = 20) adults studied photographs of indoor scenarios in preparation for a change detection task. Each scene contained a target object that was systematically manipulated regarding its semantic consistency with the background (e.g., a toothbrush vs. a banana in a bathroom). Linear deconvolution was applied to estimate the effect of semantic consistency on fixation-related potentials (FRPs) time-locked to the target fixation, the preceding fixation, all non-target fixations, and scene onset.

Across groups, inconsistent objects were fixated earlier and for longer and elicited stronger N400 responses during the target fixation and the one immediately preceding it, with no semantic effects during non-target fixations. This suggests that semantic conflict is detected in peripheral vision and resolved upon direct fixation. The only age-related difference observed was a widespread reduction in the amplitude of the neural response time-locked to scene onset in older adults, potentially reflecting decreased efficiency in extracting the scene gist.

These findings demonstrate that healthy aging preserves the neural architecture supporting semantic processing in peripheral vision, enabling older adults to extract high-level meaning from complex visual environments.

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Neural signatures of complex and real-life memories

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I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia / 878

Traslazione del modello Sign-Tracker/Goal-Tracker per lo studio dell'attribuzione della motivazione condizionata

Authors: Martino Schettino¹; Marika Mauti²; Chiara Parrillo³; Ilenia Ceccarelli⁴; Federico Giove⁵; Antonio Napolitano⁶; Cristina Ottaviani²; Marialuisa Martelli²; Cristina Orsini²

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Il modello "Sign-Tracking/Goal-Tracker" (ST/GT) è un modello animale per lo studio delle differenze individuali nel processo di attribuzione della motivazione condizionata a stimoli associati a ricompense, un processo che in alcuni individui può contribuire ad istigare una ricerca incontrollata delle ricompense, come nei disturbi da dipendenza da sostanze. In un compito di apprendimento pavloviano, gli animali con fenotipo GT attribuiscono un valore solo predittivo agli stimoli condizionati mentre quelli con fenotipo ST attribuiscono anche salienza allo stimolo predittore. Diversi studi hanno traslato questa variazione fenotipica all'uomo. Il presente studio si propone di investigare la connettività funzionale a riposo associata alla variazione fenotipica nell'uomo. A tale scopo, un task di apprendimento pavloviano traslato dalla letteratura animale è stato sviluppato e combinato con la registrazione dei movimenti oculari. Un campione di 104 partecipanti sani è stato classificato in STs (n=36), GTs (n=35) e Intermedi (n=33) sulla base della durata, del numero e della probabilità di fissazioni oculomotorie sullo stimolo condizionato o il luogo di consegna della ricompensa. Similmente a quanto osservato negli animali, i soggetti con fenotipo ST hanno mostrato dei pattern di connettività e funzionalità neurale a predominanza talamo-striatale rispetto a quelli GT che hanno mostrato invece una maggiore predominanza talamo-corticale. I risultati del presente studio supportano la rilevanza traslazionale del modello animale ST/GT e suggeriscono la possibilità che le differenze individuali nei processi di attribuzione della salienza incentivante possano essere mappate al livello della funzionalità dei circuiti talamo-cortico-striatali.

If you're submitting a symposium talk, what's the symposium title?:

I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia

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Senso di responsabilità: quando l'azione si fa coscienza / 687

Predictive Mechanisms in the Experience of Agency: Exploring the Role of Fatigue through Sensory Attenuation

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The studies presented investigate how physiological and pathological fatigue interact with predictive motor mechanisms underpinning the sense of agency (SoA)—the feeling of controlling one's actions and their consequences (1). A key aspect of these predictive processes is sensory attenuation (SA), the reduced perception of self-generated stimuli, which serves to distinguish between self- and externally-generated events.

We first propose a theoretical framework suggesting dynamic interactions between SA, perceived effort, and fatigue. Building on Kuppaswamy's Sensory Attenuation Model of Fatigue (2), we introduce a novel allostatic perspective, in which SA, effort, and fatigue are interconnected through the body's anticipatory regulation of energy (3).

To support this model, we present findings from two experimental studies. In individuals with Parkinson's Disease, pathological fatigue was associated with reduced SA, as measured by impaired performance on a force-matching task, compared to non-fatigued patients and healthy controls. This selective impairment of predictive sensory processing in fatigued patients supports the proposed interaction between fatigue and SA.

A second study extended these findings to the general population, examining how trait and state fatigue relate to SA. Results showed that higher trait fatigue was associated with diminished SA, while experimentally induced acute fatigue (state fatigue) had no significant effect. These findings suggest that stable individual differences in fatigue, rather than transient states, modulate predictive mechanisms underlying SA.

Together, these results provide initial support for a dynamic interaction between fatigue and sensory attenuation through predictive regulation, offering new insights into how internal bodily states shape fundamental aspects of self-experience.

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Senso di responsabilità: quando l'azione si fa coscienza

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Yes

Psicologia dell'arte e neuroestetica / 986

Poetica bayesiana: Un nuovo modello per lo studio dell'estetica del linguaggio

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Co-author: Francesca Piovesan¹

¹ *University of Turin*

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Il linguaggio verbale, sia nelle sue incarnazioni artistiche più riuscite sia nelle sue manifestazioni più prosaiche e quotidiane, suscita sempre in noi un ampio ventaglio di risposte valutative: dalla sensazione che una certa espressione linguistica sia ben riuscita a quella che sia mal formulata, dal piacere al dispiacere, dalla confusione alla noia, dalla suspense al senso di risoluzione. Capire il modo

in cui il linguaggio suscita queste risposte è lo scopo di un'estetica del linguaggio, ed è il compito che storicamente si sono date discipline come la poetica, la retorica e la critica letteraria. Ultimamente, però, si è aperta la possibilità di studiare l'estetica del linguaggio in maniera genuinamente interdisciplinare, mettendo in dialogo la lunga tradizione umanistica sul tema con i più recenti risultati della psicologia, delle neuroscienze e della linguistica computazionale.

Questo intervento presenta un nuovo tentativo in questa direzione. Inizierò col chiarire quali sono le risposte valutative e le caratteristiche del linguaggio che hanno una rilevanza estetica. Proporrò poi un nuovo modello dell'estetica del linguaggio che tiene conto di risultati classici della psicolinguistica e della neurolinguistica e delle recenti ricerche di linguistica computazionale. Mostrerò poi come, operazionalizzando questo modello con i LLM della famiglia GPT (che consentono di ottenere informazioni statistiche precise sugli elementi della catena verbale), è possibile fare previsioni circostanziate su quali porzioni di testo possono cagionare quali risposte valutative, aprendo nuove possibilità di indagine sperimentale. Concluderò collegando questo nuovo modello per lo studio dell'estetica del linguaggio a recenti approcci psicologici all'esperienza estetica in generale.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia dell'arte e neuroestetica

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline / 740

Towards the development of personalized Cognitive Stimulation (CS) interventions in people with cognitive impairments

Authors: Ludovica Forte¹; Rabih Chattat¹

Co-authors: Alice Annini¹; Giovanni Ottoboni¹; Giulia Despini¹; Ilaria Chirico¹; Lara Calabrese¹; Marco Brigiano¹; Maria Casagrande²; Martina Quartarone¹; Sara Trolese¹

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Group-based cognitive stimulation (CS) intervention is the most recommended psychosocial intervention in clinical guidelines for people with mild-to-moderate dementia. However, literature showing the effectiveness did not provide information about the aspects of people who are most likely to benefit from. This study aims to identify the cognitive and non-cognitive aspects of people with dementia that can represent the most reliable variables in forecasting the effectiveness of CS interventions.

A stepped wedge cluster randomised trial was conducted. Participants were recruited through local Alzheimer's Associations in Italy. Nine groups of approximately 5 older adults with mild-to-moderate dementia (total n=50; age M=80,42 DS=5,24; 34 female, 16 male) underwent CS treatment one a week for 20 sessions. CS effectiveness was measured before and after the beginning of the program. The outcomes included functional, cognitive (memory, language, attention, praxis, executive functions) psychological-affective indexes (personality traits, quality of life, self-efficacy, loneliness, behavioural and psychological symptoms, anxiety and depression). A series of multivariate (MANOVA) analyses of variance and post hoc analysis were performed, considering as dependent variables the cognitive and non-cognitive assessments.

The results showed an influence of sociodemographic aspects like age, gender, education level and years of work on the gain from CS. Cognitive functioning also moderated the effectiveness of the intervention. The outcomes from psychological and affective assessment on QoL, personality, loneliness and BPSD also had a significant impact on the effectiveness of the CS program. These results will be helpful to offer more effective and personalised CS interventions on individual cognitive and non-cognitive aspects.

If you're submitting a symposium talk, what's the symposium title?:

Mind, Body and Beyond: Integrated Approaches in Cognitive Decline

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Neural signatures of complex and real-life memories / 877

Altered theta and alpha oscillations during autobiographical memory retrieval in an individual with highly superior autobiographical memory

Authors: Tiziana Pedale¹; Sarah Daviddi¹; Fabrizio Parente²; Ilaria Cipriani²; Patrizia Campolongo³; Sabrina Fagioli⁴; Rob van der Lubbe⁵; Valerio Santangelo¹

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Highly superior autobiographical memory (HSAM) is a rare condition characterized by an extraordinary ability to recall autobiographical information with remarkable accuracy and detail. While previous studies have begun to explore the neural correlates of HSAM, the role of brain oscillations in this phenomenon remains largely unexplored. In this study, we examined an individual with HSAM and compared their brain activity to that of 16 control participants. During EEG recording, all participants were asked to retrieve autobiographical memories (AMs), pressing a button to indicate when they accessed and constructed a memory, then continuing to elaborate on it. In line with extant literature, we focused on midfrontal theta oscillations during the construction phase and posterior alpha oscillations during elaboration. Compared to controls, the HSAM individual showed reduced midfrontal theta power during construction and lower posterior alpha power during elaboration. These findings may reflect greater neural efficiency in the HSAM brain. Specifically, reduced midfrontal theta may indicate a reduced need for inhibitory control during memory construction, possibly due to the automatic nature of memory retrieval. Similarly, reduced posterior alpha during elaboration may reflect diminished cortical suppression and, speculatively, enhanced visual imagery. This study provides new insights into the neurocognitive processes supporting exceptional autobiographical memory.

If you're submitting a symposium talk, what's the symposium title?:

Neural signatures of complex and real-life memories

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Senso di responsabilità: quando l'azione si fa coscienza / 737

The effect of Sensorimotor and Cognitive Cues on the implicit and explicit experience of agency

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Sense of agency (SoA), namely the feeling of being the author of our actions is a prerequisite for experience responsibility. In four studies, I applied different experimental manipulations to investigate the influence of different sensorimotor and cognitive cues on the experience of agency. To do so, I took advantage of a validated temporal judgment task (Zapparoli 2020a, 2020b), whereby participants were instructed to switch on a lightbulb actively/passively, providing measures of their implicit and explicit sense of agency afterwards.

Spatial representations and SoA. With the first study (Mariano 2024b), I examined how the distance from a self-produced outcome ("near" vs. "far" from the participants) influences the experience of agency. Results show that participants experience reduced experience of implicit (but not explicit) agency when outcomes occur in the far space.

Motor interactions and SoA. In the second study (Zapparoli & Mariano 2024), I investigated the impact of contextual and social cues on the experience of agency, by making participants pressing a button to turn on a lightbulb synchronously. Results show that participants experience greater explicit and implicit sense of agency when acting alone.

Virtual reality and SoA. In the third and fourth studies my goal was to determine whether a sense of agency can be experienced in virtual reality when both actions and sensory consequences occur within the same virtual space. Results show that the embodiment of a virtual avatar is fundamental in the genesis of the implicit and explicit sense of agency in a virtual environment.

If you're submitting a symposium talk, what's the symposium title?:

Senso di responsabilità: quando l'azione si fa coscienza

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia / 928

Interazione gene x ambiente nel trattamento della dislessia evolutiva: uno studio traslazionale

Author: Matteo Di Segni¹

Co-authors: Lucy Babicola²; Donald Ielpo²; Chiara Mauri³; Tommaso Ciceri⁴; Denis Peruzzo⁵; Valentina Lampis³; Sara Bertoni⁶; Andrea Facchetti⁷; ROSSELLA VENTURA⁸; Sara Mascheretti³

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La lettura è un'abilità complessa il cui sviluppo deriva dall'interazione gene x ambiente (GxE) attraverso meccanismi epigenetici (e.g. miR).

Il gene DCDC2 è stato associato a variazioni interindividuali nelle prestazioni di lettura e nella percezione del movimento.

Alterazioni dell'equilibrio eccitatorio/inibitorio (E/I) e della plasticità neuronale all'interno della via magnocellulare-dorsale (MD) sembrano essere alla base di deficit nella lettura e della Dislessia Evolutiva (DE). Recentemente, è stato riportato come i videogiochi d'azione (AVG) migliorino l'attenzione e le capacità di lettura attraverso i loro effetti sulla funzionalità della via MD.

Accanto agli effetti dell'AVG sui meccanismi E/I ed epigenetici in pre-lettori con e senza delezione di DCDC2, presentiamo un modello murino genetico dall'alto valore traslazionale utile ad una più approfondita indagine neurobiologica.

78 partecipanti (M=5,17 anni) sono stati sottoposti ad un allenamento AVG (16 sessioni da 45'tre volte a settimana). Prima (T0) e dopo (T1) l' AVG, un sottocampione è stato sottoposto a una sessione di risonanza magnetica per acquisire misure in vivo di neurotrasmettitori (glutammato; Glu e acido gamma-amminobutirrico; GABA) nella corteccia prefrontale.

Inoltre, campioni di saliva dei partecipanti sono stati raccolti a T0 e T1 per identificare marcatori epigenetici (miR).

L'analisi dei neurotrasmettitori e mostra una modulazione della concentrazione di GABA e Glu in modo tempo/genotipo dipendente. L'analisi dei biomarcatori periferici rivela una complessa modulazione tempo/genotipo dipendente dei miR 365a e 645.

I presenti risultati e l'approccio traslazionale forniscono interessanti spunti sulle basi genetiche, epigenetiche e neurofunzionali alla base delle abilità di lettura e sugli effetti dell'AVG.

If you're submitting a symposium talk, what's the symposium title?:

I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Neural signatures of complex and real-life memories / 822

Shared spectral fingerprints of temporal memory precision and representation of the temporal structure of complex narratives

Author: Matteo Frisoni¹

¹ *Università di Bologna*

Corresponding Author: matteo.frisoni1@gmail.com

The ability to organize events in time is a hallmark of episodic memory. While fMRI studies have linked the entorhinal-hippocampal network to temporal judgments and event structure representation, less is known about the broader neural mechanisms supporting these abilities. This EEG study investigated whether temporal memory precision and temporal representation of event structure are related, overlap in time, and involve brain areas beyond the medial temporal lobe. Twenty participants encoded a movie and later placed short video clips on a horizontal timeline representing the movie's duration. This task provided behavioral measures of temporal precision and subjective temporal distance between clips. Using multivariate pattern analysis (MVPA) on time-frequency EEG data, we identified an electrophysiological signature of temporal precision in the high beta/low gamma band (28–40 Hz) during timeline placement. Representational similarity analysis (RSA) showed that neural similarity across scalp activity patterns mirrored the perceived temporal distance between movie segments. Notably, both effects occurred in the same time and frequency window. Moreover, temporal precision and event structure representation were positively correlated, suggesting that better accuracy is associated with a more structured temporal memory. These findings demonstrate that high beta/low gamma oscillations not only track temporal precision but also encode the mnemonic structure of complex events. By linking these two processes, our results clarify how the brain organizes episodic memories in time, extending our understanding beyond the hippocampal formation and shedding light on how experiences become “infused with time”.

If you're submitting a symposium talk, what's the symposium title?:

Neural signatures of complex and real-life memories

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicologia dell'arte e neuroestetica / 587

Assumere e presumere in psicologia dell'arte, e il ruolo della ricerca storica ed empirica

Author: Daniele Zavagno¹

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Guardando opere d'arte gli studiosi di psicologia di scuole e formazione varia spesso colgono aspetti che sembrano spiegare la natura di certe scelte formali e/o contenutistiche operate dagli artisti. Sulla scorta di tali aspetti, che il più delle volte hanno valore indiziario, procedono quindi ad analizzare le opere e a spiegare i motivi dietro quelle scelte, profondamente convinti delle proprie ipotesi e analisi. Queste spiegazioni, però, se non sono supportate da una corretta indagine storica e/o da dati ricavati attraverso esperimenti miranti a controllare le ipotesi, si rivelano giochi futili e potenzialmente dannosi a una corretta psicologia dell'arte, specie al giorno d'oggi in cui diventa sempre più difficile distinguere tra fatti e finzioni, in quanto si spacciano per fatti mere congetture. Illustrerò alcuni casi classici e altri più recenti e mostrerò contestualmente come sia la ricerca storica che quella empirica possono smontare alcune congetture ed essere di supporto a ipotesi alternative. Resta comunque il fatto che tutte le spiegazioni circa i motivi sottostanti le scelte degli artisti si situano sempre nell'ambito delle ipotesi, per quanto solide queste possano apparire, a meno che non siano gli artisti stessi a rivelarci il perché di determinate scelte. Ma in fondo è questo uno degli aspetti più intriganti dell'arte: ogn'uno è libero di interpretare l'opera per sé stesso e a ritrovarvi i propri 'motivi' nel fare ciò.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia dell'Arte e Neuroestetica

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline / 776

Evaluating the Effectiveness of Cognitive Interventions for Healthy and Mild Cognitive Impairment Adults: A Comprehensive Umbrella meta-analysis

Author: Ilaria Corbo¹

Co-authors: Giuseppe Forte ¹; Francesca Favieri ¹; Maria Casagrande ¹

¹ *Department of Dynamic and Clinical Psychology, and Health Studies - Sapienza, University of Rome*

Corresponding Author: ilaria.corbo@uniroma1.it

The global population is aging rapidly, leading to a rising prevalence of cognitive decline. Aging presents major challenges for individuals and societies, driving research into pharmacological and non-pharmacological intervention therapies. Cognitive interventions show promising effectiveness, although high variability in research protocols limits the generalizability of results.

For this reason, a meta-analysis of meta-analyses was conducted with the aim of analyzing the effectiveness of cognitive interventions on cognitive functioning in healthy older adults and older adults with Mild Cognitive Impairment (MCI).

A meta-analysis of meta-analyses was conducted in accordance with PRISMA guidelines and the systematic search was carried out in the following databases: CINHAL, Cochrane Library, PsycINFO, PubMed, Scopus and Web of Science.

A total of 9,734 publications were screened and 25 meta-analyses examining the effects of cognitive interventions, not combined with other types of interventions, in populations with healthy aging and MCI were included. A total of 111 effect sizes were compared, based on a sample of 80,910 participants.

Findings showed that although the effect-sizes across studies were variable, they were consistently positive, indicating a significant impact of different cognitive interventions on global cognitive functioning, memory, executive functions, visuospatial ability, and processing speed compared to control groups. This finding suggests that the efficacy of cognitive treatments is the best option for preclinical forms of aging, such as Mild Cognitive Impairment. Moreover, cognitive interventions offer not only cognitive benefits but also social and psychological advantages, which should be further explored.

If you're submitting a symposium talk, what's the symposium title?:

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Senso di responsabilità: quando l'azione si fa coscienza / 790

The Social Dimension of Agency: How the Shared Sense of Agency shapes Moral and Intergroup Decision-Making

Author: Giulio Piperno¹

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This contribution explores how the social dimension of the Sense of Agency—specifically the shared Sense of Agency (s-SoA)—influences moral behavior and intergroup decision-making. Through two experimental studies, I examined how interpersonal coordination shapes the experience of agency and responsibility, and how these processes, in turn, affect conformity to immoral actions and intergroup dishonesty. Both implicit and explicit measures of agency and responsibility were employed to capture the nuances of individual experience within social contexts.

Study 1 –Sense of Agency in Moral Conformity: Dyads were asked to decide sequentially whether to administer painful shocks to a third party in exchange for a shared reward. The results showed a robust conformity effect: the first agent's choice strongly influenced the second's. Antisocial conformity was associated with reduced explicit responsibility and diminished implicit agency. In contrast, prosocial conformity was linked to enhanced shared responsibility and increased SoA. These findings reveal that the moral valence of a joint action modulates agency experience and support the distinction between diffusion of responsibility and shared responsibility.

Study 2 –Shared Agency and Group Dishonesty: Participants completed a motor coordination task with a partner whose behavior was either predictable or unpredictable, manipulating perceived s-

SoA. They then performed a deception task where lying could benefit their ingroup. Higher s-SoA predicted greater dishonesty for the group's benefit, only in individual providing stronger "binding" moral ratings. This suggests that the experience of agency within group contexts can morally shift behavior depending on one's moral framework.

If you're submitting a symposium talk, what's the symposium title?:

Senso di responsabilità: quando l'azione si fa coscienza

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia / 845

Sexual behavior as a model for the study of the neurobiology of motivation: insights from animal studies

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Sexual behavior is a natural and highly reinforcing behavior that can be divided in two main components: the appetitive/motivational and the consummatory one. Neurobiological studies involving animal models, mainly rodents, identified a complex brain circuit responsible for the regulation of different aspects of sexual behavior, in which dopamine seems to play a key role in motivation by acting at the level of the mesocorticolimbic pathway (VTA –nucleus accumbens/prefrontal cortex). Recent work from our Lab, employing psychogenetically selected (i.e., the Roman lines) as well as dopamine transporter knockout rats (DAT KO), indicates that differences in dopamine signalling relate to individual differences in (sexual) motivation. In particular, a weak mesolimbic dopaminergic tone relates to a lower sexual motivation and biobehavioral traits resembling depression-like conditions, while a more robust one relates with a higher motivation and better performances. However, chronic hyperdopaminergia as seen in DAT KO rats is associated with impulsive-compulsive traits, stereotypies and inability to properly direct reward-related behavior. The characterization of these processes is necessary not only for the identification of the mechanisms at the basis of sexual motivation and to better understand the pathophysiology behind psychogenic sexual dysfunctions, but also for the understanding of the neurobiology at the basis of more generalized alterations in motivated behavior. On this regard, the use of the animal model represents a potent and useful tool for the identification of genotypic/phenotypic, neurochemical, behavioral and environmental factors involved in the regulation of physiological and pathological conditions affecting the motivational processes at the basis of behavior.

If you're submitting a symposium talk, what's the symposium title?:

"I modelli animali nella traslazione clinica della ricerca sperimentale in Psicologia" (id #747)

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Senso di responsabilità: quando l'azione si fa coscienza / 730

Embodying a Divine Avatar: Modulating Self-Perception and Moral Judgment in Virtual Reality

Author: Althea Frisanco¹

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The studies presented examine how changes in bodily representation and identity-related features can influence self-perception and moral standards. The embodiment illusion—the sensation of owning and controlling a virtual avatar—typically arises through synchronous body movements, a first-person perspective, and the avatar's appearance. Modulating these parameters can affect psychophysiological responses. This raises a key question: can such modifications also impact users' sense of responsibility in virtual events?

We first demonstrated that embodying an avatar resembling the Christian God—an omnipotent agent within Christianity-rooted cultures—can shift self-perceptions of personal limits and capabilities, fostering a sense of increased strength and invulnerability. Building on this, we explored effects on moral conflict resolution, given God's cultural role as an ultimate moral authority. In an initial study using text-based moral dilemmas, embodiment had no significant effect on resolution type (deontological vs. utilitarian), decision time, moral judgments, or physiological responses—likely due to the abstract nature of the task and limited immersion.

To overcome these limitations, a follow-up study presented immersive versions of the Trolley and Footbridge dilemmas, requiring participants to act within the scene. In the God-avatar condition, participants exhibited heightened skin conductance responses during decision-making in the Footbridge scenario, suggesting greater emotional engagement and possibly an increased sense of moral responsibility. Notably, those who made a utilitarian choice—pushing one individual to save five—rated their action as more morally acceptable than those in the human-avatar condition. These findings highlight virtual embodiment as a potential tool for exploring and shaping moral cognition.

If you're submitting a symposium talk, what's the symposium title?:

Senso di responsabilità: quando l'azione si fa coscienza

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Neural signatures of complex and real-life memories / 862

Specialization of Retrieval-Related Activity for Different Memory Dimensions

Author: Federica Procida¹

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The mnemonic representation of complex events is multidimensional. Although it has been shown that the recollection of complex events jointly recruits the Default Mode Network (DMN) and the FrontoParietal Control Network (FPCN), the extent to which activity within these networks varies according to specific memory dimensions (e.g., what, where, when) remains underexplored. To address this, the present study examined to what extent the topography and hemispheric asymmetry of retrieval-related activity are dimension-specific. Using a cued recollection paradigm, participants were asked to judge the truthfulness of statements related to scenes from a previously encoded TV series episode (Sherlock, BBC), along four dimensions: objects/character's details, spatial layouts, temporal sequences, and verbal dialogues. Voxel-wise and network-based analyses were conducted,

with attention to hemispheric lateralization and its relationship to behavioral performance. We found a higher degree of dimension-specificity within the DMN compared to the FPCN, especially in posterior nodes of the network, compatible with the presence of a functional subdivision for the processing of different types of mnemonic information. Moreover, a stronger left hemispheric lateralization emerged, partially influenced by the type of information retrieved. Finally, the degree of dimensional specificity positively correlated with behavioral performance, suggesting that such functional segregation supports memory retrieval. These results support the notion that specific memory information is processed by a mosaic of regions within large associative cortical areas involved in higher-order mnemonic functions.

If you're submitting a symposium talk, what's the symposium title?:

Neural signatures of complex and real-life memories

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicologia dell'arte e neuroestetica / 892

Costruendo connessioni significative con il patrimonio culturale: il caso del Sarcofago degli Sposi per NEURO-Museum

Author: Mariapia Lucia¹

Co-authors: Marco Iosa¹; Michela Benente²; Michela Franzò¹; Valeria Minucciani²

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Introduzione

Il progetto PRIN 2022 PNRR NEURO-Museum, finanziato dall'Unione Europea (NEXT GENERATION EU) e condotto da Sapienza Università di Roma e Politecnico di Torino, ha indagato nuove forme di culture wellbeing nei musei, analizzando come spazio, narrazione ed emozioni possano favorire un senso di appropriazione personale del patrimonio culturale. Questo studio ha confrontato gli effetti dell'esperienza di visita in due contesti: la copia del Sarcofago degli Sposi presso la necropoli di Cerveteri (coerenza geografica) e l'originale al Museo Nazionale Etrusco di Villa Giulia (coerenza culturale).

Metodo

Sessanta partecipanti hanno osservato il sarcofago in entrambi i contesti, accompagnati da narrazioni audio alternate tra descrizione razionale vs. coinvolgimento emotivo. Con EEG (Mindtooth Touch) e GSR (Shimmer 3 GSR+) abbiamo rilevato tre indici: carico cognitivo (Cognitive Workload), motivazione implicita (Approach-Withdrawal) e attivazione emozionale (Galvanic Skin Response). Le sessioni includevano anche una stimolazione riflessiva ("condizione Domanda") e baseline standardizzate. I dati fisiologici sono stati integrati con questionari pre e post visita (AEQ, PANAS).

Risultati

Il CW è risultato significativamente più elevato al Museo ($p = .003$) e nella condizione Domanda ($p = .029$), suggerendo maggiore coinvolgimento cognitivo. L'AW ha indicato tendenza all'approccio più marcata a Cerveteri ($p = .026$), forse per la coerenza con il sito archeologico. Il GSR ha mostrato un incremento emozionale progressivo nel Museo (interazione $p = .001$), e una riduzione a Cerveteri, suggerendo un impatto dato dall'allestimento museale.

Conclusioni

Fattori di contesto, narrazione e stimolazione emotiva influenzano l'esperienza estetica e l'appropriazione culturale, con implicazioni per pratiche museali inclusive e trasformative.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia dell'Arte e Neuroestetica

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline / 803

The self and peripersonal space: a novel two-phase audio-tactile paradigm and its implication for defensive boundaries

Authors: Salvatore Gaetano Chiarella¹; Riccardo De Pastina²; Antonino Raffone²; Luca Simione¹

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Peripersonal space (PPS) refers to the space immediately surrounding the body and plays a crucial role in motor interaction and defensive behavior. Furthermore, PPS has been linked to the bodily self and shown to be highly plastic: its boundaries can be modulated physically (e.g., spinal cord injury, amputation, tool use), perceptually (e.g., mindfulness, interoception, sensory deprivation) but also cognitively (e.g., following positive or negative social interactions). We propose a novel paradigm to investigate whether PPS can also be modulated by purely cognitive manipulations related to self vs. non-self-representations. Participants will complete a two-phase procedure. In the Association Phase, they will perform a sound-label matching task, associating two neutral auditory stimuli with self ("YOU") or non-self ("STRANGER") labels, creating implicit links. In the PPS Measurement Phase, participants will perform an audio-tactile integration task where previously associated sounds (self vs. non-self) accompany tactile stimuli delivered at varying distances. Reaction times to tactile stimuli as a function of auditory proximity will be used to infer PPS size and strength. If PPS solely reflects bodily self-modulations, no difference is expected between conditions. If cognitive self-associations influence PPS, non-self-associated stimuli should elicit a wider and more rigid PPS compared to self-associated stimuli. This paradigm may provide evidence on how abstract self-representations can reshape multisensory defensive boundaries. Understanding these dynamics is particularly relevant for aging populations, who often show an increased perception of environmental stimuli as threatening. Potential applications in mindfulness or compassion-based interventions will be discussed.

If you're submitting a symposium talk, what's the symposium title?:

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Senso di responsabilità: quando l'azione si fa coscienza / 1024

Domande e discussione

Neural signatures of complex and real-life memories / 941

Neural correlates of the semantization process: graph-like construction of social knowledge from TV series encoding

Author: Federica Santacroce¹

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Traditional accounts describe semantic memory as static and crystallized, often overlooking its episodic origins. Recent theories suggest that conceptual knowledge may emerge from low-dimensional, Cartesian-like representational space (Bellmund, 2018), potentially supported by medial parietal regions (Bottini&Doeller, 2020). However, empirical evidence, especially with high-dimensional, naturalistic inputs, remains limited. We addressed this gap by developing an ecological paradigm to investigate the transformation of episodic experiences into semantic representations.

In an fMRI experiment, participants passively viewed characters from two TV series during an incidental task. After watching TV-series1, they underwent an identical fMRI session and then completed a behavioral task assessing perceived social proximity among TV-series1 characters. We ran separate GLMs for pre- and post-encoding sessions, contrasting TV-series1 characters (familiar only post-encoding) with those from TV-series2. Representational Similarity Analysis (RSA) quantified changes in neural pattern similarity (post-pre) between character pairs. The neural dissimilarity matrix was then correlated with behavioral proximity ratings.

The pre-session contrast showed medial occipital activation, while the post-session contrast revealed medial parietal involvement. RSA showed a significant negative correlation between neural dissimilarity in right precuneus/PCC and perceived social proximity ($\rho = -0.05$, $p = 0.007$), indicating more similar patterns for socially closer characters.

These findings suggest that an initial perceptual distinction between character sets, which emerged by the occipital activation of the pre-encoding session, becomes a semantic one represented in medial parietal regions. Multivariate results extend previous evidence of geometric encoding (temporal distance) in episodic memory in the hippocampus (Deuker, 2016) to that of semantic (social distance) in the medial parietal cortices.

If you're submitting a symposium talk, what's the symposium title?:

Neural signatures of complex and real-life memories

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicologia dell'arte e neuroestetica / 707

L'arte moderna fa bene? Dipende dal coinvolgimento

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Introduzione. Numerosi studi dimostrano che la fruizione dell'arte può avere un impatto positivo sulla salute e il benessere. Questa ricerca ha l'obiettivo di indagare come diversi approcci di fruizione

dell'arte, in un contesto museale, possano influenzare il benessere e l'esperienza estetica.

Metodo. Due gruppi di partecipanti (N = 134; 71 gruppo "discussione", 63 gruppo "libero") hanno condotto due visite diverse alla Galleria Nazionale d'Arte Moderna e Contemporanea di Roma: nel primo gruppo veniva agevolata la discussione incoraggiando i partecipanti a trovare una connessione tra vissuti personali e opere d'arte; il secondo gruppo svolgeva una visita libera senza discussione. Sono stati somministrati due questionari prima e dopo la visita per osservare il possibile cambiamento affettivo attraverso test come PANAS, STAI, ecc. Inoltre, sono state rivolte due domande aperte: cinque parole per descrivere la visita e una breve descrizione scritta.

Risultati. Nel gruppo "discussione" non si sono osservate differenze significative tra prima e dopo la visita sia nello stato affettivo sia nel livello d'ansia. Al contrario, i partecipanti del gruppo libero hanno riportato un aumento dell'affetto positivo e una diminuzione dell'ansia. Inoltre, la frequenza riportata di parole come tristezza e ansia era maggiore (35) per il gruppo discussione rispetto al gruppo libero (12).

Conclusioni. La differenza nell'esperienza della visita tra i due gruppi è probabilmente dovuta al diverso approccio: l'arte moderna trasmette spesso contenuti negativi che tendono ad avere una maggiore risonanza all'interno del gruppo coinvolto nella discussione rispetto al gruppo libero che conduce la visita in maniera probabilmente più superficiale.

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Psicologia dell'arte e neuroestetica

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No

Mind, Body, and Beyond: Integrated Approaches in Cognitive Decline / 1044

Open Discussion

Lunch and poster 1 / 491

Diverse dinamiche decisionali alla base del riconoscimento di stimoli noti e nuovi

Authors: Elisa Fiora¹; Michele Scaltritti²; Simone Sulpizio¹

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Nel compito di decisione lessicale, il partecipante deve riconoscere se gli stimoli sono parole o non-parole. Nel presente studio, si è indagato se queste due categorie di stimoli siano associate a dinamiche decisionali differenti, focalizzandosi sull'esecuzione motoria della risposta. Sono state impiegate 5 categorie di stimoli: parole di alta frequenza, parole di bassa frequenza, pseudoparole (ossia parole non esistenti derivate da parole reali cambiando una sola lettera, merenca), non-parole (ossia stringhe di lettere leggibili che non assomigliano a nessuna parola reale, taderco) e stringhe illegali di lettere (lbqtrsv). Mediante registrazioni elettromiografiche (EMG), il tempo delle risposte manuali fornite durante il compito (TR) è stato suddiviso in tempo premotorio (TPM)—l'intervallo tra la presentazione dello stimolo e l'attivazione muscolare—e tempo motorio (TM)—l'intervallo tra l'attivazione muscolare e la pressione del pulsante. I risultati hanno mostrato che TR e TPM erano più brevi per le stringhe, seguite da parole di alta frequenza, parole di bassa frequenza, non-parole e pseudoparole. Al contrario, i TM erano comparabili per parole di alta e di bassa frequenza, e stringhe, ma più lunghi per nonparole e pseudoparole. I risultati relativi ai TM suggeriscono una parziale differenziazione nei processi decisionali riconducibile alla presenza di evidenza (che caratterizza il riconoscimento

di parole di alta e di bassa frequenza, e le stringhe) vs assenza (che caratterizza il riconoscimento di non-parole e pseudoparole).

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Lunch and poster 1 / 700

The relationship between sleep-related memory reactivation and dreaming: a Targeted Memory Reactivation pilot study

Author: Bianca Pedreschi¹

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Introduction:

Dreams have been proposed as a window into sleep-related memory consolidation and integration processes. In this study, we investigate the interplay between sleep, memory consolidation, and dream content using targeted memory reactivation (TMR), a method that delivers sensory cues during sleep to influence memory processing.

Methods:

Ten participants (5 females, mean age: 29.3 ± 3.1 y) underwent two experimental nights: a SHAM (no stimulation) night and a STIMulation night during which auditory cues (pseudowords) associated with pictures belonging to specific semantic categories were presented selectively during N2 and REM sleep. Before sleep, participants performed a semantic association/recognition task, memorizing as many category-specific images as possible while learning the pseudoword-category associations. Each semantic category (Buildings, Children, Food, Mammals, Vehicles, Water) included 33 pre-validated images balanced for emotional valence and arousal. Memory performance was assessed before and after sleep. High-density EEG monitoring and serial awakenings were conducted to collect dream reports. Two independent, blinded raters evaluated on a Likert scale the degree of reference to semantic categories in 75 dream reports.

Results:

Preliminary analyses showed no significant effect of TMR on memory performance ($p > 0.05$). No evidence of increased cued category incorporation was found in dreams collected after TMR during either N2 or REM sleep.

Conclusions:

Our preliminary findings suggest that TMR during sleep did not enhance memory performance nor promote memory-related incorporation into dream content. However, a larger sample size is necessary to conclusively determine the effects of TMR on memory consolidation and dream incorporation.

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Lunch and poster 1 / 622

Toward a Universal Model of Subjective Financial Well-Being: Evidence from Iranian Emerging Adults

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Financial well-being includes both objective indicators (e.g., income, savings) and subjective evaluations of one's financial situation (subjective financial well-being, SFWB). Recent literature emphasizes the subjective dimension for its ability to provide a more holistic view of financial well-being. While early research treated SFWB as unidimensional, more recent studies recognize its complexity. Among various tools, the Multidimensional Subjective Financial Well-Being Scale (MSFWBS; Sorgente & Lanz, 2019) stands out as the most comprehensive, measuring five dimensions through 25 items.

Originally developed in Italy for emerging adults (18–29 years), the MSFWBS has been validated in several countries (Sorgente et al., 2024). However, its five-factor structure was not confirmed in India, raising doubts about its applicability in non-WEIRD (Western, Educated, Industrialized, Rich, and Democratic) contexts. At the same time, evidence from Brazil and Turkey suggests the scale can be valid in non-WEIRD settings (de Oliveira Cardoso et al., 2024). To further test the model's generalizability, we examined MSFWBS validity among Iranian emerging adults.

Data were collected from 356 participants. Confirmatory factor analysis supported the five-factor model. Internal consistency was high across all subscales. The structure was invariant across gender, age, employment, and living arrangement. Convergent and criterion validity were confirmed through significant correlations with income and life satisfaction.

These findings support the cross-cultural applicability of the MSFWBS in a new non-WEIRD country. Currently, we are collecting data in seven additional non-WEIRD countries to further assess the generalizability of MSFWBS model across diverse cultural and economic contexts.

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Lunch and poster 1 / 501

Towards a New Scientific Utopia: A Blockchain-Based Framework to Support Open Science in Psychology

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In the last decade, the Open Science movement has proposed solutions to the proliferation of Questionable Research Practices, which undermined the credibility of psychological science. Among them, one the most successful has been the Open Science Framework (OSF), which encompasses a set of tools for making the entire research process more open, and which has had a central role in defining innovative policies to promote reproducibility. We propose a blockchain-based framework designed to complement the existing Open Science Framework (OSF). By leveraging blockchain technology, cryptocurrencies, and Web3 tools - such as smart contracts, Non-Fungible Tokens and Decentralized Autonomous Organizations - this framework could enhance key aspects of the research lifecycle, including pre-registration, data collection, peer review and publication. This model also comes with a new incentive and meritocratic system which, by following the model of cryptocurrencies, has the potential to motivate individual actors to advance the goals of Open Science.

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Lunch and poster 1 / 500

THE SWAP READING TEST: NORMATIVE DATA TO MEASURE PERIPHERAL ACQUIRED DYSLEXIAS IN AN ITALIAN ADULT POPULATION

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Co-authors: Laura Veronelli ²; Silvia Primativo ¹; Lucia Ghielmi ²; Silvia Pino ²; Marialuisa Martelli ³; Roberta Daini ²

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Introduction. It has been shown that omission and substitution errors in reading single words and pseudowords in the acquired reading disorder of right brain-damaged patients can depend on at least two different mechanisms: the association of unilateral spatial neglect with altered eye movements (i.e., neglect dyslexia), which produce left-sided omissions (Primativo et al., 2015) or an enhancement of crowding phenomenon (i.e., crowding dyslexia), responsible for non-lateralized substitutions (Daini et al., 2025).

Objectives. We provide normative data for the Spacing Words And Pseudowords (SWAP) reading test for the Italian population. A new evaluation method based on the type of error was proposed (letter-based) and the effect of spacing condition on specific types of errors was investigated in a neurologically healthy population.

Methods. The test was administered to a sample of 199 neurologically intact Italian subjects (86 males), with an average age of 57.33 years (range 20-90) and an average education level of 14.07 years (range 5-18).

Results. Cut-off scores for both word-based and letter-based number of errors are provided. A significant effect of spacing on accuracy was observed, with a decrease in performance in the spaced condition; specifically, a significant difference between the two conditions was noted for substitutions and omissions.

Conclusions. The spaced and unspaced word reading test could be used as a clinical tool to investigate the visual-perceptual and attentional mechanisms involved in reading and affected by brain damage.

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Lunch and poster 1 / 512

Exploring the influence of number magnitude on walking direction: Evidence for spatial-numerical associations with a free response task in a virtual reality setting

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The Spatial-Numerical Associations of Response Codes (SNARC) effect describes the spatial relationship between number magnitude and response side, with small numbers associated with the left space and large numbers with the right space (Dehaene et al., 1993). Typically, the SNARC effect is studied on simple movements, and it is revealed by spatial response tasks through response time differences. The present study investigates whether similar spatial biases also occur for decisions on complex movements, specifically walking, using a free response task in a virtual reality environment. Each trial (N=90) begins with a virtual screen displaying a number (1–9). Participants are required to: a) process the number's magnitude, b) retain it in working memory, and c) walk towards a target area represented as an arc that runs symmetrically left and right of the central screen. Upon crossing the target, they verbally report whether the number was smaller/larger than or equal to 5. The results showed: a) a significant difference in left/right response frequency between small and large numbers, with more left vs. right responses for small numbers and more right vs. left responses for large numbers; b) that response angle increased with number magnitude. This study highlights that the decision underlying walking direction is influenced by number magnitude, when using a free response task requiring explicit number magnitude processing.

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Lunch and poster 1 / 532

Cognitive and executive task-specific functions in elementary assembly tasks: a theoretical mapping for mental workload assessment in Human-Robot Collaboration

Author: Flavia Ciminaghi¹

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In manual manufacturing processes, assembly tasks involve not only physical effort but also cognitive demands. While physical workload has been extensively investigated, the anticipatory assessment of mental workload remains a relatively underexplored domain. This contribution presents a theoretical framework aimed at mapping the specific cognitive and executive functions involved in elementary manual assembly tasks - namely, identification, handling, alignment, joining, adjustment, and checking. The framework distinguishes between basic cognitive functions (e.g., visual and tactile perception, visuo-motor coordination, selective and sustained attention, short-term and long-term memory) and executive functions (e.g., planning, decision-making, working memory, monitoring, cognitive flexibility, inhibitory control, and response regulation). For each elementary task, we identify the distinctive mental processes required to perform the action effectively, highlighting

their functional and operational characteristics. This mapping not only provides a conceptual tool for analyzing the cognitive demands of manual work but also serves as a practical basis for implementing adaptive human-robot collaboration. In particular, understanding the mental architecture underlying each task allows for the integration of collaborative robots (cobots) in a way that complements human cognitive effort, enhancing performance, reducing errors, and promoting well-being. This framework represents an initial step toward a more comprehensive understanding of the cognitive efforts involved in manual tasks, potentially integrating behavioral data and neurophysiological measures in empirical research in real-world industrial environments.

If you're submitting a symposium talk, what's the symposium title?:

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Lunch and poster 1 / 544

Plant awareness disparity: Do we count plant differently?

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Plant Awareness Disparity (PAD) is a cognitive phenomenon where human observers tend to overlook plants in complex scenarios, favoring animals and inanimate objects. Our study investigates whether this tendency extends to the numerical perception of plants compared to other elements. We conducted two behavioral experiments to test the hypothesis that plant numerosity is systematically underestimated. Participants evaluated groups of 7, 8, or 9 elements belonging to three categories: plants (trees), animals, and minerals. In the first experiment, subjects compared two sequential displays, one always containing plants and the other animals or minerals, indicating which contained more elements. In the second, they estimated the precise number of elements in a single display containing one of the three categories. Results confirm our hypothesis: plant numerosity is consistently underestimated. In the comparison experiment, accuracy was significantly higher only when plants were actually fewer in number. In the estimation experiment, the reported number of plants was systematically lower both compared to other categories and to the actual number presented. These findings suggest that PAD not only influences plant perception in complex visual scenes but also impairs fundamental perceptual processes such as numerosity judgment. This broadens our understanding of PAD's impact on human cognition and highlights the importance of considering this bias in contexts beyond simple visual identification.

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Lunch and poster 1 / 547

Differenze di identificazione nelle parole tabù in L1 vs L2: Una questione di esposizione?

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La letteratura sul bilinguismo suggerisce che le parole tabù (ovvero socialmente inappropriate) suscitino risposte più intense nella lingua nativa (L1) rispetto alla seconda lingua (L2). Il presente studio indaga tale ipotesi in un campione di parlanti bilingui italiano(L1)-inglese(L2), a medio-alta competenza nella L2. È stata utilizzata una procedura di progressive masking, in cui una maschera composta da # e una parola si alternano sullo schermo in una rapida serie di cicli di presentazione. Tutti i cicli hanno uguale durata, ma, procedendo, la durata della maschera si riduce mentre quella della parola aumenta. Ai partecipanti era richiesto di premere un tasto quando identificavano una parola e, subito dopo, di trascriverla. Durante l'esperimento, sono state presentate parole tabù e non-tabù, sia in italiano, sia in inglese. Sono stati misurati i tempi di e l'accuratezza nell'identificazione degli stimoli. L'esperienza bilingue (i.e., competenza, esposizione e dominanza linguistica) dei partecipanti è stata misurata tramite il questionario LEAP-Q. I risultati confermano un riconoscimento più rapido e accurato delle parole tabù nella L1 rispetto alla L2. Tuttavia, tale differenza tenderebbe a scomparire all'aumentare dell'esposizione alla L2, suggerendo che la differenza tra L1 ed L2 possa essere ricondotta a un'asimmetria esperienziale.

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Lunch and poster 1 / 599

The Impact of Gaze Direction on the Other-Race Categorisation Advantage

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In the last decades, increasing efforts have been devoted to exploring the influence of ethnic group membership on face processing. Several studies have shown that individuals process own-race faces differently from other-race faces. Specifically, research has documented the phenomenon known as the Other-Race Categorisation Advantage (ORCA), which refers to the tendency for individuals to categorise other-race faces faster than own-race faces. Theoretical models suggest that this effect arises because own-race faces are processed more holistically, whereas the perception of other-race faces relies more heavily on the analysis of individual facial features, such as eye-gaze cues. The present study aimed to explore the contribution of gaze cues to the ORCA effect. Participants (n = 121) performed a speeded binary classification task, categorising faces as either own-race or other-race. Crucially, the faces displayed either direct or averted gaze. Consistent with previous findings, results revealed faster reaction times (RTs) when participants categorised other-race faces compared to own-race faces (i.e., the so-called ORCA). Importantly, a significant interaction between ethnicity and gaze direction also emerged. Specifically, for own-race faces, RTs were faster for faces with direct gaze compared to those with averted gaze, whereas no significant differences related to gaze direction were observed for other-race faces. Together, these findings enrich existing theoretical accounts of ORCA, suggesting that eye-gaze direction would be relevant only when classifying own-race faces. Nonetheless, future research is needed to further clarify the mechanisms underlying this effect.

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Lunch and poster 1 / 607**Accident Risk Reduction of Vulnerable Road Users: An Interdisciplinary and Multi-Perspective Approach for the Improvement of Urban Road Safety (the ARCADE Project).****Author:** Giovanni Bruno¹**Co-authors:** Marco Bassani²; Alessandra Lioi²; Alessandro Verducci²; Francesco Bella³; Andrea Spoto⁴¹ *Università degli Studi di Padova*² *Politecnico di Torino*³ *Università degli Studi Roma Tre*⁴ *Università degli Studi di Padova - Dipartimento di Psicologia Generale***Corresponding Author:** giovanni.bruno.2@unipd.it

The present contribution aims to provide initial insights from the “ARCADE”PRIN project. Adopting a multi-technique approach that combines observational analysis with simulation methods, the project brings together the expertise of three Research Units (RUs –Rome, Turin, and Padua) in the fields of Road Engineering and Psychology. The objective is to identify behavioral, psychological, and geometrical factors contributing to conflict patterns in driver–VRU interactions, focusing on specific hazardous sites within the three RUs’ cities.

The project is dedicated to reducing accident risks for Vulnerable Road Users (VRUs), such as pedestrians and cyclists. Reducing road fatalities among VRUs is a key goal of both European and National Road Safety initiatives, which recognize this population as highly exposed to hazardous driving behaviors and occupying a fragile role within the road transportation system. At each site, risk assessment and the evaluation of effective safety countermeasures are jointly investigated through a cutting-edge, multi-perspective simulative approach that explores the interactions between VRUs and drivers.

Combining evidence from the three RUs, observational analyses have shown that road design and layout significantly influence crash frequency and severity. Notably, dedicated cycle lanes—separated from ordinary traffic lanes—resulted in fewer collisions compared to shared lanes. Overall, findings from driving simulation studies involving increasingly complex road interactions demonstrated that adopting specific geometric configurations as safety countermeasures—together with attention to the individual characteristics and behavioral attitudes of both drivers and VRUs—promotes more functional interactions and enhances protection for the most vulnerable road users.

If you’re submitting a symposium talk, what’s the symposium title?:**If you’re submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:**

No

Lunch and poster 1 / 669**L’influenza dei meccanismi attentivi sull’abilità di lettura nell’invecchiamento sano****Authors:** Simone Galati¹; Sara Pegoraro²**Co-authors:** Alessio Facchin³; Camilla Frontoni¹; Elena Rolandi⁴; Emanuela Bricolo¹; Lisa S. Arduino⁵; Roberta Daini⁶¹ *Dipartimento di Psicologia, Università di Milano-Bicocca*

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La lettura rappresenta un'attività stimolante che, in fase di invecchiamento, può supportare il mantenimento delle capacità cognitive. La letteratura scientifica ha però ampiamente dimostrato come anche la lettura sia un processo influenzato dall'invecchiamento, necessitando di integrità sia sensoriale sia delle diverse componenti cognitive. L'obiettivo della nostra ricerca è quello di indagare se il declino della lettura con l'età possa essere addotto a componenti attentive, in particolare all'attenzione selettiva visuo-spaziale. Lo studio ha coinvolto 120 anziani neurologicamente sani (range d'età 60-88 anni) i quali sono stati sottoposti ad una valutazione neuropsicologica che valutava le abilità di lettura, il funzionamento cognitivo globale, l'attenzione, il crowding e le capacità visive. I risultati mostrano come, oltre al funzionamento cognitivo globale e alle capacità visive, anche l'attenzione, valutata con il test OORTT e il test di Stroop, sia un mediatore significativo della relazione tra età e lettura. La specifica componente di attenzione visuo-spaziale sarebbe invece un moderatore di tale relazione: in chi manifesta un peggioramento in termini di attenzione visuo-spaziale si assiste ad un significativo peggioramento della performance di lettura con l'età. I nostri risultati sottolineano come la lettura sia un processo cognitivo complesso, il cui declino è dovuto all'interazione di molteplici fattori. Il ruolo di moderatore dell'attenzione visuo-spaziale mette in evidenza anche l'importanza della variabilità che caratterizza l'invecchiamento sano.

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Lunch and poster 1 / 678

Impatto sulla cognizione di un training centrato sulle rappresentazioni del corpo funzionali e interocettive

Author: Silvia Canino¹

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Alla luce delle teorie dell'embodied cognition (Goldman & de Vignemont, 2009) e delle recenti prospettive teoriche che enfatizzano il ruolo dell'interocezione nei processi cognitivi (Azzalini et al., 2019), questo studio propone un nuovo training centrato sulle rappresentazioni mentali del corpo (RMC), funzionali e interocettive, valutandone l'efficacia nel potenziare diverse abilità in età adulta. Hanno preso parte allo studio 103 partecipanti sani, suddivisi in adulti più giovani (AG: 18-43 anni, N=66) e adulti più anziani (AA: 50-72 anni, N=37) assegnati a gruppi sperimentali, che hanno svolto il training (AG-t, AA-t), e di controllo che non svolgevano il training (AG-C, AA-C). Tutti i partecipanti sono stati sottoposti ad una valutazione iniziale (T0) volta ad esaminare le RMC (orientate all'azione, non orientate all'azione e interocettive) e abilità cognitive di alto livello (memoria prospettica e ToM). Dopo 4 settimane, è stata effettuata una seconda valutazione (T1) con le stesse prove. I partecipanti dei gruppi sperimentali hanno svolto, tra T0 e T1, il training con esercizi volti a stimolare le RMC funzionali e interocettive tramite un'applicazione dedicata, con tre sessioni settimanali e per un totale di 4 settimane. Le analisi condotte evidenziano un miglioramento significativo a T1 nell'accuratezza interocettiva

solo nei gruppi sottoposti al training (AG-t e AA-t). Sono emersi, inoltre, miglioramenti significativi nella ToM negli AG-t e nella memoria prospettica negli AA-t. Questi risultati preliminari supportano l'efficacia di un training basato sull'elaborazione corporea per il potenziamento cognitivo, sostenendo le teorie che enfatizzano il ruolo delle rappresentazioni del corpo, interocettive e funzionali, nei processi cognitivi.

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No

Lunch and poster 1 / 666

Chi sono i clown dottori? Stili comici, giocosità, flessibilità cognitiva

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Introduzione

L'efficacia di interventi di clown dottori in contesti ospedalieri è un risultato consolidato in letteratura, mentre indagini sulle caratteristiche psicologiche dei clown dottori sono scarse. La ricerca qui presentata si propone di indagare le relazioni tra stili comici preferiti dai clown dottori, il loro grado di giocosità e flessibilità cognitiva.

Metodo

Un campione di 210 clown dottori italiani (143 femmine) età compresa tra 18 e 75 anni (M=47.34, SD=12.31) ha compilato un questionario contenente domande demografiche, domande relative agli anni di esperienza come clown dottori e le seguenti scale: Comic Styles Markers, che misura 8 stili comici suddivisi in benevoli (umorismo benevolo, divertimento, arguzia, non-sense) e malevoli (sarcasmo, ironia, satira, cinismo); Short Measure of Adult Playfulness; Cognitive Flexibility Scale.

Risultati

I risultati hanno dimostrato che i clown dottori con maggiore esperienza tendono a usare meno stili malevoli rispetto ai partecipanti con minore esperienza. Le analisi di regressione lineare multipla hanno rivelato che la flessibilità cognitiva predice positivamente la giocosità e alcuni stili comici adattivi (umorismo benevolo e arguzia). Inoltre, la flessibilità cognitiva risulta negativamente correlata al sarcasmo (stile comico disadattivo). L'aumento della flessibilità cognitiva si riflette nella preferenza per l'umorismo benevolo e l'arguzia, piuttosto che per il sarcasmo, oltre che in un aumento della giocosità.

Conclusione

Questi risultati forniscono le basi per poter progettare interventi formativi dei clown dottori mirati a un aumento della flessibilità cognitiva e a una maggiore consapevolezza degli stili comici che si possono mettere in campo nell'interazione con i pazienti.

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Lunch and poster 1 / 609

User Experience Questionnaire for Virtual Reality Applications in Healthcare (UXVR-H): Development of a New Assessment Tool

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Virtual reality (VR) integration in healthcare has demonstrated significant therapeutic potential, improving treatment adherence, accessibility, and clinical effectiveness. While self-report questionnaires remain the preferred method for user experience (UX) assessment due to their psychometric properties and efficiency, existing instruments present significant methodological limitations when applied to VR contexts, having been designed for conventional two-dimensional interfaces.

To address this gap, we developed a targeted questionnaire through a systematic multi-method approach. A comprehensive literature review identified eight critical dimensions for VR UX evaluation, that we have declined in an initial pool of 271 potential items. Content validation involved 112 older adults assessing item comprehensibility across 14 groups, with particular attention to syntactic clarity and terminological complexity. Eight independent judges then provided qualitative judgments on theoretical conceptualization, quantitative assessments of each item's relevance using a 3-point Likert scale, and blind classification of dimensional affiliation to verify content validity. Items receiving a relevance rating of 1 were eliminated, as were those misclassified dimensionally by multiple judges. We retained items rated 3 by at least half the judges with no ratings below 2.

This iterative process resulted in a 24-item instrument rated on a 5-point Likert scale Base on the agree or disagree with each statement (from 1 = Not at all to 5 = Extremely).

The developed instrument represents a significant advancement in UX assessment methodology for healthcare VR applications. Future research will focus on psychometric validation through confirmatory factor analysis to empirically verify the hypothesized dimensional structure and establish the instrument's psychometric properties.

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Lunch and poster 1 / 516

Negotiation under the lens: individual differences and brain-to-brain synchronization explored with fNIRS hyperscanning

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Negotiation plays a crucial role in reaching mutually beneficial agreement during shared decision-making. In neuroscience, hyperscanning paradigm allows to grasp the complexity of brain dynamics during such complex interactions. This study used functional Near Infrared Spectroscopy (fNIRS) hyperscanning to investigate brain-to-brain synchronization during interactive negotiation, and explored individual differences' impact on this process. 13 homologous dyads of Speaker A and B participated in a shared decision-making task involving negotiation. The task included three steps:

Individual Decision-Making Step (InDec-step), where participants individually selected one statement that best expressed their perspective; Cooperation Step (Coop-step), involving collaborative negotiation; and Reaching an Agreement step (Agr-step), where mutual agreement was reached. Participants completed the General Decision-Making Style, the Maximization Scale and the Big Five Inventory scales. Inter-brain neural activity was recorded using fNIRS hyperscanning during the baseline and the task. Results revealed higher dissimilarity in deoxygenated hemoglobin (HHb) levels during the condition in which B was speaking and Speaker A was listening, suggesting that the two participants experienced different levels of cognitive demand during the interaction, or that Speaker A may have been attempting to assert his own perspective. Moreover, HHb dissimilarity in the left hemisphere during the Agrstep negatively correlated with the avoidant decision-making style, the tendency to search for alternatives, and the decision-making difficulties subscale. Similarly, during the Indstep and Coopstep, a negative correlation emerged with the extraversion trait. These findings reveal that brain synchronization in negotiation is sensitive to both conversational roles and individual differences in personality and decision-making profiles.

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No

Lunch and poster 1 / 536

The rubber hand illusion questionnaire: An exploratory graph analysis of ownership, referral of touch, and control statements

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Introduction: The rubber hand illusion is a well-known experiment that allows manipulation of one's own body experience. The original questionnaire gauges both the illusion experience and unforeseen experiences acting as control statements. In particular, two statements pertain to the referral of touch originating from the rubber hand (RoT), and one concerns the feeling of ownership of the rubber hand (SoO). Despite its prominence, the rubber hand illusion questionnaire has not undergone thorough examination of its psychometric properties. The literature reveals a tendency to use RoT and SoO statements interchangeably.

Methods: We induced the Rubber Hand illusion to 214 healthy participants and we analysed the answer to the original embodiment questionnaire. In this study, we employed Exploratory Graph Analysis to explore the item structure and compared the correlation between SoO and RoT items in various conditions.

Results: While SoO and RoT are closely linked, our findings suggest potential separation. SoO and RoT statements consistently correlate, yet hints emerge that RoT might represent a distinct facet of the illusion. Correlations diminish beyond the perihand space, indicating a nuanced relationship. Additionally, moderate relationships between control statements and those measuring the illusion suggest that even control statements are modulated by the illusion experience.

Discussion: This study underscores the need for further exploration into the psychometric properties of body illusion questionnaires, prompting reflections on the interpretation in light of these results.

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Lunch and poster 1 / 562

An implicit approach to measuring conspiracy beliefs: the Conspiracy Theories Semantic Misattribution Procedure (CT-SMP)

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Conspiracy theories attempt to explain the underlying causes of major socio-political events by attributing them to secret plots. This suggests the importance of tackling conspiracy beliefs from a multidimensional perspective and moving beyond explicit methods, which often fail to capture the complexity and implicit nature of conspiracy beliefs. To address this issue, two conceptualizations were developed to provide a solid theoretical foundation for constructing an implicit measurement instrument. The first conceptualization links conspiracy beliefs to social-existential motives, focusing on intergroup phenomena and interpretations of the social world; the second is about individual-epistemic motives, viewing conspiracy beliefs as rooted in perception and subjective interpretation of reality. By adopting the first conceptualization, the present study focuses on the development of the Conspiracy Theories Semantic Misattribution Procedure (CT-SMP), a novel implicit tool adapted from the Semantic Misattribution Procedure (SMP), which itself is a variant of the Affective Misattribution Procedure. The CT-SMP presents participants with semantic primes at suboptimal exposure durations, followed by ambiguous Chinese pictographs. These prime stimuli selectively activate semantic associations in individuals with a higher predisposition toward conspiracy thinking. They are derived from four semantic dimensions identified through an analysis of the literature about conspiracy beliefs: intentionality, malevolence, secrecy, and epistemic superiority. These categories were later organized into two separate groups, namely intentionality-malevolence, and secrecy-epistemic superiority. Participants are required to judge whether each pictograph suggests an "evil purpose" and a "hidden truth". This paradigm captures spontaneous evaluative responses, enabling implicit assessment of conspiracist ideation beyond the limitations of explicit self-report methods.

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No

Lunch and poster 1 / 556

Emotions modulate audiovisual binding and reduce visual-leading bias in speech integration

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Visual and auditory signals from a common source are typically integrated into a unified percept despite slight asynchronies—a phenomenon central to audiovisual (AV) speech perception. While this integration facilitates speech comprehension, it remains unclear how emotional context affects crossmodal binding. In two experiments, participants performed either a simultaneity judgment (SJ; Experiment 1, N = 45) or a temporal order judgment (TOJ; Experiment 2, N = 60) task using AV speech stimuli. Actors pronounced the word “no” with facial expressions and intonations that conveyed positive, negative, or neutral emotions. Auditory and visual speech components were misaligned across different stimulus-onset asynchronies. Emotional (positive and negative) stimuli yielded larger just noticeable differences (JNDs) than neutral ones, indicating reduced temporal sensitivity and a wider temporal binding window. Emotional stimuli also shifted the point of subjective simultaneity (PSS) closer to zero, suggesting a reduction of the typical visual-leading bias and improved synchrony perception. Notably, the SJ task showed wider JNDs and greater PSS variability across emotions than TOJ tasks, implying that SJ responses rely more on subjective judgment, whereas TOJ tasks engage more precise temporal processing. These findings reveal that emotion influences AV speech integration by widening the temporal window for binding and mitigating temporal biases, especially when synchrony is inferred indirectly.

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No

Lunch and poster 1 / 557

Why do we overshare? An exploratory study on the phenomenon of oversharing in a sample of Italian adolescents and young adults

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In the digital age, sharing frequent updates and content about one's private life is highly prevalent among adolescents. The construct of oversharing refers to excessive sharing behaviour in terms of frequency and intimacy of information.

Background: Despite the relevance and potential negative consequences, oversharing remains under-investigated in the literature. This study explores oversharing in an Italian sample of adolescents and young adults, examining its features and its psychological and demographic correlates (self-esteem, loneliness, interpersonal difficulties and problematic social media use).

Methods: Data were collected via an online self-report questionnaire, which included the Online Oversharing Inventory, UCLA-Loneliness Scale, Rosenberg Self-Esteem Scale, Inventory of Interpersonal Problems, Social Media Disorder Scale, and custom items. A total of 262 responses were collected (71.4% female; average age 20.67, SD = 3.08). Descriptive statistics, correlation, and regression analyses were conducted.

Results: The OOI scale results show that 12.6% of participants shared most private life events online, and 24.8% felt nothing was too personal to post. Teenagers showed a tendency to overshare more than young adults. No significant gender differences emerged, though females shared more detailed content about location, participants, and emotions. Certain interpersonal difficulties (Intrusive-Needy, Domineering-Controlling, Overly Accommodating-Exploitable, Non-assertive, Self-sacrificing-Overly nurturant) and problematic social media use were significantly linked to oversharing. No associations were found with self-esteem and loneliness.

Conclusions: This research reflects on the relationship between oversharing and its antecedents, and whether this construct is toxic or consistent with evolutionary needs. The findings may prompt further studies on oversharing and its potential risks.

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Lunch and poster 1 / 588

DiffuseFace: a database of AI-generated face portraits to enrich diversity in emotion research.

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We present DiffuseFace, a database of AI-generated face portraits designed to address limitations of traditional databases and enhance diversity in emotion studies. Traditional databases, such as CEED (Benda & Scherf, 2020) and FACES (Ebner et al., 2010), typically include photographs of real actors captured in controlled environments. While invaluable, their creation demands substantial time and financial resources and raises privacy concerns related to material sharing. These constraints may limit the representation of ethnicities and facial expressions, reducing diversity and hampering generalizability (Barrett et al., 2019). Recent research highlights the potential of generative AI (Demszyk et al., 2023) to advance methodologies. We extend this approach to emotion research by using generative AI to create a large, diverse face database with lower costs and fewer constraints than traditional methods. DiffuseFace comprises 600 portraits of women and men from 20 nationalities, displaying 14 distinct emotional expressions (e.g., amusement, shame) and a neutral pose, generated with the open-source StableDiffusion model. Building on prior research (Holland et al., 2019), we will collect data on attitudes toward generative AI, perceived realism, and emotion recognition ratings from 500 U.S. participants. We will also evaluate whether AI-generated stimuli are comparable to real-actor portraits in features critical to emotion research. Preliminary data from 260 individuals indicate that AI-generated faces are perceived as highly realistic and their emotional expressions well-recognized. These findings underscore the potential of generative AI to efficiently produce diverse, high-quality stimuli and improve research generalizability.

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Lunch and poster 1 / 531

Il rapporto tra Teoria della Mente e Funzioni Esecutive nell'invecchiamento sano: il declino cognitivo generale e dominio-specifico

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Introduzione: La Teoria della Mente (ToM) è un costrutto complesso che si articola in diverse componenti, i.e. ToM cognitiva e affettiva, di primo e di I-II ordine, del quale è documentato un declino nell'invecchiamento. Quest'abilità ha una complessa interazione con altre funzioni cognitive, tra cui le Funzioni Esecutive (FEs), che a loro volta subiscono un deterioramento nell'invecchiamento, anche sano. Obiettivo dello studio è una valutazione di alcune componenti della ToM (affettiva, cognitiva di I e II ordine) durante l'invecchiamento sano e l'esame del ruolo che le FEs possono ricoprire in questo declino.

Metodo: 56 partecipanti tra i 65 e gli 86 anni di età, ulteriormente suddivisi in due gruppi da 28 partecipanti ciascuno, e un gruppo di controllo di 28 giovani (20-40 anni), bilanciati per sesso (14M;14F) e scolarità ($\chi^2(4, N=84)=.140, p=.998$), sono stati valutati in compiti di ToM (affettiva, cognitiva-I ordine, cognitiva-II ordine), FEs (Aggiornamento, Flessibilità, Inibizione) e altre funzioni cognitive (Attenzione, Long-Term Memory, Working Memory).

Risultati: L'ANOVA mostra un peggioramento statisticamente significativo in ToM ($F(2, 81)=16.59, p<.001, \eta^2=.291$) e in EFs ($F(2, 81)=17.99, p<.001, \eta^2=.308$) in entrambi i gruppi di anziani rispetto ai giovani. Esistono correlazioni significative tra tutti i compiti di ToM e i compiti di Aggiornamento e Flessibilità ($p<.001$). Tuttavia, le analisi di regressione hanno rivelato che le FEs non hanno un impatto significativo nello spiegare il declino della ToM.

Conclusioni: La ToM subisce un declino durante l'invecchiamento in tutte le componenti indagate e questo non è spiegabile dal decremento nelle prestazioni alle FEs mostrate dai soggetti anziani.

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Lunch and poster 1 / 582

Dual-Task Interference in Prospective Memory: Focal vs. Non-Focal Cue Effects

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Aim: Prospective memory (PM) is the ability to remember future intentions, which is influenced by cue relevance in the ongoing task. Prospective memory tasks can be focal, with cues promoting automatic retrieval, or non-focal, requiring strategic monitoring. This study examined performance on focal and non-focal PM tasks under dual-task conditions, combining a Lexical Decision Task (LDT) and a Sequential Finger Tapping Task (SFTT). Previous research suggests that performing cognitive and motor tasks simultaneously can impair performance due to attentional limitations. **Materials and Methods:** Twenty-six right-handed, native Italian speakers ($M = 21.8, SD = 3.56; 19 F$) were enrolled. The task was an LDT, where participants identified words and non-words, responding with a key when a PM target word appeared. In some conditions, the task was performed concurrently with a SFTT involving a 4-digit sequence using the non-dominant hand. **Results:** A repeated-measures ANOVA showed that cognitive load significantly affected reaction times in PM cues, with faster responses in the single-task condition ($p < .001$). Focal cues also led to faster responses than non-focal ones. In the LDT, single-task conditions again resulted in faster reaction times ($p < .001$) and higher accuracy. Accuracy was also higher for focal stimuli compared to non-focal ($p < .005$). **Conclusions:** The results confirm that PM is influenced by both the type of cue and the presence of additional cognitive load, affecting reaction times and accuracy. Overall, focal cues significantly enhance performance, while dual-task interference appears to substantially reduce the overall cognitive efficiency of prospective memory processes.

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No

Lunch and poster 1 / 533

Nuovi strumenti per la detection del malingering: Groningen Effort Test

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Il *malingering* si riferisce alla simulazione o esagerazione intenzionale della sintomatologia clinica per ottenere un vantaggio secondario. La sua valutazione è cruciale in ambito forense e clinico.

La letteratura sottolinea l'importanza di strumenti psicometrici standardizzati, tra cui misure autoriferite di sintomi potenzialmente inverosimili (assurdi o fittizi) e test volti a rilevare sottoperformance intenzionale (*Performance* e *Symptom Validity Tests*, PVT e SVT).

Sebbene le principali organizzazioni professionali ne raccomandino l'uso sistematico, manca, ad oggi, un protocollo unificato. In Italia, tali strumenti sono ancora poco utilizzati, anche a causa della scarsa disponibilità di versioni validate in lingua italiana, favorendo approcci meno rigorosi.

In questo contesto, il presente studio introduce la validazione italiana del *Groningen Effort Test* (GET-It), un nuovo PVT che si propone di misurare le capacità di concentrazione e attenzione dell'individuo. Il GET-It è attualmente in fase di validazione su un campione clinico e tre gruppi di confronto, inclusi simulatori istruiti. È stato confrontato con lo standard costituito da un PVT e un SVT: il *Test of Memory Malingering* e la *Self-Report Symptom Inventory*.

I dati preliminari supportano la validità del GET-It come strumento complementare ai PVT mnemonici, con indici di specificità e sensibilità soddisfacenti.

Il GET-It rappresenta quindi, un contributo promettente nella rilevazione delle sottoperformance intenzionali relative ai processi attentivi e di concentrazione, promuovendo l'adozione di strumenti più rigorosi e culturalmente adattati nella pratica clinica e forense per l'individuazione del *malingering*.

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Lunch and poster 1 / 567

Motor signatures of Digital Intentions: A 3D analysis of typing movement on the smartphone

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Touchscreen interactions require complex motor coordination, particularly of the thumbs. This study investigates the kinematic differences underlying two classes of digital intention: content consumption and content generation. Eighteen naïve participants were instructed to type standardized sentences on Google and WhatsApp, respectively representing the two digital intentions. Thumb trajectories were recorded through a 3D motion capture system (8-camera infrared setup, 100 Hz), with reflective markers placed on key anatomical landmarks of both thumbs and wrist. To systematically quantify motor behavior, we developed a novel 3D reference model—Dance of Thumbs (DoT). The DoT model captures spatial displacement, velocity peaks, temporal parameters. Preprocessing and analysis were carried out using a custom MATLAB script, which included temporal segmentation and spatial displacement of kinematic data. Results demonstrate statistically significant differences in spatiotemporal parameters between the two groups: Digital natives (born after 1980) showed higher movement regularity and efficiency across both tasks, suggesting sensorimotor optimization through habitual touchscreen use. The DoT model provides a robust framework for quantifying fine motor dynamics in digital contexts. These results reveal motor markers of digital intention and support the integration of kinematic analysis into broader contexts of digital behaviour and competence.

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Lunch and poster 1 / 538

Exploring the classical and numerical Delboeuf illusion: the impact of transcranial alternating current stimulation on magnitude processing

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Understanding cognitive and neural mechanisms underlying quantity processing is crucial for unraveling human cognition. The existence of a single magnitude system, encompassing non-symbolic number estimation alongside other magnitudes like time and space, is still highly debated since clear evidence is limited. Recent research examined whether spatial biases also influence numerosity judgments, using visual illusions like the Delboeuf illusion. While findings support a generalized magnitude system, direct comparisons of spatial and numerical Delboeuf illusions are missing. This study explored whether perceptual biases similarly affect different magnitude processing and whether transcranial alternating current stimulation (tACS) modulates these processes. Participants underwent three tACS conditions (seven Hz, 18 Hz, placebo) while performing tasks involving the classic and numerical Delboeuf illusions. We hypothesized that theta-frequency tACS (seven Hz) would enhance visual integration and illusion strength, while beta tACS (18 Hz) would reduce it by promoting visual segregation. Results indicated higher discrimination accuracy in area-based tasks than numerical judgments. Nonetheless, a significant correlation between performances in spatial and numerical illusions supported the existence of a shared mechanism for magnitude processing. Contrary to expectations, seven Hz tACS reduced the perceptual illusion's strength. No significant interaction emerged between tACS frequency and discrimination abilities. These findings deepen our understanding of the cognitive processes involved in magnitude perception, potentially supporting the hypothesis of a generalized magnitude system. They also highlight the potential and

limitations of non-invasive brain stimulation techniques, such as tACS, in modulating perceptual processes, offering insights into the neural underpinnings of quantity perception.

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Lunch and poster 1 / 505

Collective minds, individual brains: EEG evidence from organizational decision-making

Author: Katia Rovelli¹

Co-authors: Laura Angioletti¹; Roberta Antonia Allegretta¹; Angelica Daffinà¹; Martina Kutufa²; Michela Balconi¹

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Organizational decision-making (DM) is a multifaceted process influenced by both cognitive and social variables. Among these, the construction of Self-Relevance (SR) –the subjective significance attributed to a decision by an individual –has received limited attention in neuroscience, particularly in applied workplace settings. This study aimed to explore the behavioural and neurophysiological correlates of three distinct SR-based DM approaches: egocentric (E), shared (S), and impersonal (I). A sample of 20 professionals engaged in an ecologically valid decision-making task simulating real-world scenarios, with corresponding electroencephalography (EEG) recordings capturing neural responses. Response tendencies, response times, and power variations in EEG frequency bands (e.g. delta, theta, alpha, beta, gamma) were analyzed. Results indicated a marked behavioural preference for the (S) approach, supported by increased beta and gamma activity in frontal regions – frequencies implicated in motivational and reward-related processing. Moreover, correlations between self-report DM styles and behavioural data highlighted individual differences in preference patterns. Specifically, intuitive and dependent styles predicted a greater inclination toward (S) and (I) choices, whereas difficulty in decision-making was inversely related to (E) decisions. These findings underscore the cognitive and affective mechanisms underlying SR in professional contexts and suggest that shared decision-making may hold intrinsic reward value. The integration of EEG data with behavioural and psychometric measures advances our understanding of organizational DM, offering a neurocognitive basis for tailoring interventions to support more effective and collaborative practices.

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No

Lunch and poster 1 / 618

Hormones and Disgust: A Systematic Review of Gender-Related Differences

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Hormones play a crucial role in shaping the sensitivity and intensity of disgust responses, with these effects varying based on sex and other physiological factors. These mechanisms are deeply rooted in evolutionary processes, where disgust serves as a protective function, helping to avoid potential physical or social harm. Literature highlighted that women tend to exhibit higher disgust sensitivity than men. These differences hold across diverse nations, suggesting they are unlikely to be driven only by cultural factors. However, the specific antecedents of these differences remain unclear. A widely shared hypothesis states that sexual hormones are pivotal in this evolutionary path. This review aims to encompass the literature on the relationship between sexual hormones and sensitivity to disgust to shed light on the actual role played by the hormones in this association. Following PRISMA guidelines, a systematic search of Scopus (114 results), PubMed (66 results), Web of Science (94 results), and PsychInfo (62 results) was conducted. Two reviewers will independently screen all studies and evaluate the risk of bias using the Critical Appraisal Skills Programme checklists. Results will be synthesized narratively, with emphasis on the methodological quality of the included studies to ensure a rigorous interpretation of the findings.

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Lunch and poster 1 / 504

Trattamento Cognitivo Pragmatico in telehealth (@CPT) per adolescenti nello spettro autistico: modalità telehealth vs. face-to-face

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Introduzione: Il Disturbo dello Spettro Autistico (ASD) include difficoltà nella comunicazione pragmatica, ovvero la capacità di usare il linguaggio e altri mezzi espressivi (e.g. gesti, espressioni facciali) in modo appropriato al contesto. Attualmente, pochi interventi mirano a migliorare tale abilità negli adolescenti autistici, e ancor meno in telehealth.

Scopo del lavoro è valutare l'efficacia dell'adattamento in telehealth (@CPT) del Trattamento Cognitivo Pragmatico, creato per il potenziamento della comunicazione per adolescenti nello spettro autistico (A-CPT; Gabbatore et al., 2022).

Metodo: Undici adolescenti autistici (età media=14.27±1.95; QI=89.80±19.13; scolarità 9.36±2.3) hanno partecipato al trattamento in telehealth (@CPT). Un secondo gruppo di undici adolescenti autistici, abbinato al precedente per età (T-test: $t=.62$, $p=.53$), QI ($t=.34$, $p=.73$), e scolarità ($t=.27$, $p=.78$), ha seguito il trattamento face-to-face (A-CPT).

I gruppi sono stati valutati sull'abilità pragmatica prima dell'intervento (T0), al termine (T1) e dopo tre mesi (T2), e sulle abilità cognitive a T0 e T1, tramite:

- L'Assessment Battery for Communication (ABaCo)
- Batteria di Valutazione Neuropsicologica per l'adolescenza (BVN 12-18)

Risultati: Entrambi i gruppi mostrano miglioramenti nei punteggi ABaCo (ANOVA a misure ripetute; Totale: $F=21.97$, $p<.001$, $\eta^2_p=.52$; Comprensione: $F=23.46$, $p<.001$, $\eta^2_p=.54$; Produzione: $F=7.18$, $p=.002$, $\eta^2_p=.26$). Si riscontrano prestazioni simili tra le modalità (face-to-face vs. telehealth), i.e. no effetti di interazione Tempo×Gruppo o effetti del Gruppo. Come atteso, non sono stati rilevati miglioramenti nelle abilità cognitive (ANOVA a misure ripetute; $.006<F<5.8$, $.18<p<1$, $.00<\eta^2_p<.25$), né effetti di interazione o effetti del Gruppo.

Conclusione: L'@CPT è efficace nel migliorare la comunicazione-pragmatica al pari dell'A-CPT in adolescenti nello spettro.

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No

Lunch and poster 1 / 503

Eye-Tracking Insights During Live Basketball Games: a pilot study

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In the field of sports science, eye tracking has emerged as a crucial tool for investigating the visual and cognitive mechanisms underlying athletic performance. However, current literature highlights a significant gap, namely the limited number of eye-tracking studies conducted during live game situations. The majority of existing research has focused on controlled game scenarios.

The aim of this preliminary study was to investigate the visual behavior of coaches and referees during a live basketball game. For data acquisition, we enrolled 5 coaches and 5 referees and employed the Pupil Labs eye-tracking device. A novel system was used for data processing, incorporating two pre-trained Artificial Intelligence (AI) models specifically designed to analyze eye-tracking data in the context of live basketball games. We showed that both in lead and in tail positions the referees presented greater pupillary dilation for the team in defense ($p<0.001$). Regarding coaches, we highlighted a higher number of fixations ($p=0.01$) and a greater dilation ($p=0.04$) when the coach's team plays in their own half of the field.

These preliminary results showed that when referees are required to evaluate defensive movements, they may be subjected to increased cognitive load or stress. In the case of coaches, the factor of 'proximity to the action' appears to play a crucial role in assessing game dynamics. Future research should consider an expanded sample size and improvements in the AI system's ability to recognize other fundamental elements of the game (such as the ball and the basket).

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Lunch and poster 1 / 692

Creativity Evaluation Task: una versione italiana

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La creatività è un costrutto complesso che coinvolge sia la produzione di idee originali che la valutazione della creatività delle idee stesse. Mentre la produzione creativa si riferisce alla capacità di generare idee nuove e appropriate, la valutazione della creatività riguarda l'abilità di riconoscere e giudicare il valore creativo di un'idea o di un prodotto. Questa distinzione è cruciale, poiché non sempre chi è in grado di produrre idee creative è altrettanto abile nel valutarle e viceversa. Tuttavia, mentre la produzione creativa è stata ampiamente studiata, la capacità di giudicare la creatività rimane meno esplorata.

Il presente lavoro si pone come obiettivo la creazione di una versione italiana del Creativity Evaluation Task (CET) di Benedek e colleghi. Il CET è uno strumento sviluppato per misurare la capacità di valutare la creatività di idee in modo sistematico, è strutturato in modo da presentare ai partecipanti una serie di idee generate attraverso compiti di pensiero divergente. I partecipanti devono classificare ciascuna idea in base al suo livello di creatività. Il test utilizza tre categorie principali: creative –idee originali e appropriate; comuni –idee non originali ma appropriate e inappropriate – idee originali ma non appropriate. Gli item sono stati costruiti da un database di risposte dell'Alternative Uses Task. Attraverso una analisi delle risposte, sono stati selezionati 17 item comuni, 22 item inappropriate e 20 item comuni. Il questionario è stato somministrato online attraverso la piattaforma Microsoft Forms e sono stati raggiunti 200 soggetti. Attualmente il questionario è in fase di analisi.

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Lunch and poster 1 / 674

Swipe Dynamics Across Generations: An Analysis of Touchscreen Interaction

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Touch-based interaction is central to smartphone use. Research on human–technology interaction has traditionally focused on typing behavior, often through the analysis of timing and spatial characteristics—as exemplified by large-scale studies such as Palin et al. (2019). In contrast, swipe gestures

remain understudied, despite their ubiquity in mobile interaction.

This study examines the execution of horizontal and vertical swipes using SMO DS, a custom Android-based application developed for the high-resolution recording of touchscreen data. The platform captures gesture duration and touch pressure during controlled tasks.

Participants were assigned to two generational groups: Digital Natives (DN) and Digital Immigrants (DI) (Prensky, 2001). Each completed both swipe conditions. The goal was to assess whether gesture dynamics vary by direction and user profile.

Results indicate that, in DN, all measured parameters significantly differed between horizontal and vertical swipes. This suggests sensitivity to gesture type and a differentiated motor response. In DI, the distinction between swipe directions was not uniformly reflected across the set of measured variables.

The observed patterns suggest that generational factors may influence how users differentiate between touchscreen gestures. Although preliminary, these results underscore the value of extending motor-level analyses to a broader repertoire of digital actions. Swipe-related measures could provide useful insights into individual differences in sensorimotor engagement with mobile technology.

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Lunch and poster 1 / 709

Migliorare la diagnosi neuropsicologica: dai Punteggi Equivalenti ai Ranghi Percentili (con intervalli di confidenza), un'applicazione sul MoCA 8.1.

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La valutazione neuropsicologica si basa su dati normativi per interpretare i punteggi degli esaminati ai test. Il sistema del Punteggi Equivalenti (PE), ampiamente utilizzato in Italia, è un metodo non parametrico che categorizza la prestazione degli esaminati ai test in cinque livelli ordinali. Il sistema dei PE fornisce una chiara classificazione clinica ma presenta diverse limitazioni, tra cui una bassa sensibilità, una ridotta precisione per i casi borderline e non coglie piccole variazioni di performance. Un approccio alternativo è l'uso dei percentili, che offre diversi vantaggi. I percentili forniscono un'indicazione diretta della prestazione al test comparata con la popolazione di riferimento, sono riconosciuti a livello internazionale e sono più sensibili a sottili cambiamenti nella prestazione degli esaminati. I percentili sono anche ampiamente utilizzati nella neuropsicologia dello sviluppo, nella sanità e nell'istruzione, facilitando la comunicazione tra professionisti. Un esempio di applicazione ha preso in considerazione le norme italiane del MoCA 8.1 illustrando la relazione tra i PE e i ranghi percentili. L'analisi mostra che il cut-off dei PE si allinea con il 2°-4° percentile. Dati i loro vantaggi, si raccomanda di utilizzare i ranghi percentili per valutazioni più precise e trasversali.

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Lunch and poster 1 / 724

Aging and Time Perception: Differences in Explicit and Implicit Timing

Authors: Jacopo Barbiero¹; Fiorella Del Popolo Cristaldi¹; Irena Babnik¹; Giovanna Mioni²

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Time perception is a fundamental cognitive function that plays a crucial role in coordinating behavior and interacting with the environment. Explicit and implicit timing represent two distinct yet partially overlapping processes, with explicit timing involving conscious estimation of intervals and implicit timing relying on automatic processing of temporal regularities. Aging is associated with cognitive decline, but its impact on these timing mechanisms remains unclear.

This study investigated age-related differences in explicit and implicit timing using electroencephalography (EEG). Participants included 26 older adults (age > 60, mean age: 70.7 years) and 30 young adults (mean age: 21.7 years) as a comparison group. Two tasks were administered: a temporal bisection task (explicit timing) and a foreperiod task (implicit timing). Behavioral performance and EEG data (focusing on the Contingent Negative Variation, CNV, and N1-P2 complex) were analyzed. Results revealed that older adults exhibited impaired performance in the explicit timing task, with a tendency to overestimate durations, while their implicit timing remained largely preserved. EEG analyses showed reduced CNV amplitude in older adults, particularly for longer intervals, suggesting altered temporal accumulation processes. The N1-P2 complex, associated with temporal expectations, was also attenuated in older adults during implicit timing. These findings indicate that aging differentially affects explicit and implicit timing, with explicit timing being more vulnerable to cognitive decline, likely due to demands on memory and attention. The study highlights the dissociation between these timing mechanisms and provides insights into the neural correlates of temporal processing in healthy aging.

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No

Lunch and poster 1 / 546

Quando la rabbia non passa: validazione italiana dell'Anger Rumination Scale

Author: Flavia Rucci¹

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La ruminazione è un processo cognitivo caratterizzato dalla focalizzazione su un evento con valenza negativa, che porta ad esperire pensieri persistenti e ripetitivi su tale evento. Una forma specifica di ruminazione è quella che può verificarsi a seguito di eventi che suscitano rabbia, la cosiddetta ruminazione di rabbia. Il presente studio si propone di validare la versione italiana dell'Anger Rumination Scale (ARS; Sukhodolsky et al., 2000), composta da 19 item volti a misurare la tendenza individuale a ruminare su episodi di rabbia. La scala originale è stata tradotta in italiano, retro-tradotta in inglese e somministrata ad un campione di circa 600 partecipanti, insieme ad un pool di questionari: la Ruminative Response Scale, la Positive and Negative Affect Schedule (Trait e State) e lo State Trait Anger Expression Inventory, utili per le analisi di validità convergente e divergente. La struttura

fattoriale è stata analizzata attraverso un'Analisi Fattoriale Esplorativa e un'Analisi Fattoriale Confermativa. Tali analisi hanno confermato il modello originale a quattro fattori. La versione italiana dell'ARS mostra buone caratteristiche di affidabilità e validità simili a quelle della versione originale. I risultati, pertanto, permettono di suggerire l'utilizzo della scala nella pratica clinica, ad esempio nel contesto psicoterapeutico o di counseling. La scala può aiutare il professionista ad avere una misura della capacità del paziente di far fronte e gestire situazioni che suscitano rabbia, compromettendone il benessere della stessa persona.

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Lunch and poster 1 / 520

Profilazione neurocognitiva nei disturbi da uso di sostanze e nel gioco d'azzardo patologico: risultati da uno studio transdiagnostico

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Lo screening neurocognitivo nei disturbi da uso di sostanze (DUS) e nel disturbo da gioco d'azzardo patologico (GAP) è cruciale, alla luce della significativa sovrapposizione tra questi disturbi e deficit in ambiti cognitivi chiave come il controllo degli impulsi e la flessibilità cognitiva. Studi recenti evidenziano come individui con DUS presentino compromissioni neurocognitive che incidono sull'aderenza e sull'esito dei trattamenti. Analogamente, il GAP condivide molte vulnerabilità esecutive, richiedendo anch'esso una valutazione cognitiva strutturata. In questo contributo, si presentano i risultati di un'analisi comparativa condotta su una coorte di 525 soggetti (372 pazienti con DUS, 85 pazienti con GAP, 68 adulti sani), sottoposti a una batteria digitalizzata di screening neurocognitivo (Batteria per le Funzioni Esecutive nell'Addiction, BFE-A) composta da test neuropsicologici e compiti computerizzati focalizzati su memoria, apprendimento, attenzione, e flessibilità cognitiva. Le analisi, controllando per età e genere, mostrano performance inferiori per DUS e GAP rispetto al gruppo di controllo in compiti di attenzione focalizzata, memoria verbale e fluency non verbale, suggerendo un pattern comune di disfunzione esecutiva. Inoltre, il punteggio relativo alla componente strategica del subtest di fluency non-verbale, insieme alla tipologia di dipendenza (GAP vs. DUS), è risultato un predittore significativo rispetto ai dati di astinenza a tre mesi. Questa evidenza sottolinea la potenziale utilità prognostica di specifici indici cognitivi, da integrare nella pianificazione terapeutica. I risultati suggeriscono l'importanza di adottare protocolli di screening neurocognitivo mirati e transdiagnostici nei servizi per le dipendenze, a integrazione di un percorso di assessment basato primariamente su strumenti clinici e psicometrici.

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Lunch and poster 1 / 527

Strategie di donazione di organi: l'effetto del consenso presunto e i modelli organizzativi di Spagna e Italia

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Il presente studio analizza l'impatto del consenso presunto sui tassi di donazione di organi, un tema di crescente rilevanza nel contesto sanitario globale. La carenza di organi disponibili per i trapianti continua a causare numerosi decessi, con dati preoccupanti registrati in vari Paesi. Mentre il modello del consenso presunto, adottato da nazioni come Austria e Francia, è visto come un potenziale strumento per incrementare le donazioni, la sua efficacia rimane oggetto di dibattito. Paesi come Spagna e Italia, pur non avendo formalmente implementato tale sistema, hanno ottenuto risultati assai notevoli grazie a strategie organizzative e campagne di sensibilizzazione. Il modello spagnolo, con la sua struttura multilivello e il supporto di un sistema sanitario nazionale, ha dimostrato che fattori come la formazione del personale e l'inclusione di donatori con criteri più ampi sono cruciali per il successo. Questo studio suggerisce che per migliorare i tassi di donazione di organi, oltre a un adeguamento legislativo, è necessario un approccio integrato che consideri diversi aspetti organizzativi e culturali.

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Lunch and poster 1 / 920

The Virtual Memory Ecological Battery (V-MEB): Preliminary Psychometric Validation of a VR-Based Memory Assessment Tool

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This study introduces the Virtual Memory Ecological Battery (V-MEB), an innovative virtual reality-based assessment tool designed to evaluate memory functioning within ecologically valid environments for early detection of cognitive decline. Traditional neuropsychological assessments often lack ecological validity—the extent to which they reflect real-world cognitive demands. The V-MEB addresses this limitation through seven interconnected subtests that simultaneously assess multiple memory domains (spatial, episodic, procedural, semantic, prospective, and executive functioning) within naturalistic contexts. Using an Oculus Meta Quest 3 headset, participants engage in immersive everyday scenarios including navigation, shopping, and cooking tasks. The battery generates 29 distinct performance metrics that collectively create a comprehensive memory profile. In our ongoing validation study including both cognitively normal older adults and individuals with Mild Cognitive Impairment, the V-MEB is being compared with standardized assessments including the Addenbrooke's Cognitive Examination III, Frontal Assessment Battery, and Rivermead Behavioural Memory Test. Key methodological innovations include task interdependence, concurrent assessment of multiple memory domains, contextual memory cues, and meaningful environmental embedding. The poster presentation will focus on preliminary psychometric validation results, including reliability, factor structure, and convergent validity with traditional measures. This ecologically grounded approach may provide more functionally relevant insights into memory capacities than conventional approaches, potentially offering enhanced sensitivity for detecting subtle cognitive alterations associated with early stages of cognitive decline.

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Lunch and poster 1 / 619

RAISE! Active Aging Training Enhances Spatial Mental Representations During Familiar Route Walking Across Cognitive and Psychological intrinsic Capacities

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Aging is a multifaceted process involving biological, psychological, and social changes that collectively affect an individual's ability to adapt and function. Rather than focusing solely on disease, current perspectives emphasize maintaining intrinsic capacity—mobility, cognition, emotional well-being, and vitality—as central to aging well. Declines in spatial navigation are particularly impactful, affecting autonomy and daily functioning. Older adults often experience impairments in spatial memory, orientation, and route learning, leading to reduced confidence and increased isolation.

This study introduces RAISE! (Route to Active Independence through Spatial Enhancement), a novel training that integrates moderate physical activity with spatial cognitive tasks embedded in real-world environments. Unlike traditional dual-task programs that may overwhelm older adults, RAISE! grounds cognitive training in daily walking routines and familiar environments. Through guided exploration of varied paths, participants engage in egocentric and allocentric navigation tasks designed to reinforce mental spatial maps and enhance real-time adaptation. This ecological approach may improve general cognition, emotional well-being, and physical health, including mild BMI changes, while promoting social engagement.

RAISE! aims not only to preserve spatial skills but also to foster independence by reinforcing functional capabilities necessary for everyday life. By facilitating motivation through meaningful, context-driven tasks, this intervention supports long-term adherence and relevance. We hypothesize improvements across cognitive, emotional, and physical domains, contributing to enhanced quality of life. This model highlights the potential of embedded cognitive-motor training as a scalable, low-cost strategy for delaying functional decline in aging populations and supporting autonomy through enriched spatial awareness and real-world engagement.

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Lunch and poster 1 / 614

Testing the role of the beta band and the inferior frontal gyrus in linguistic prediction with HD-tACS

Authors: Marta Battistutta¹; Marco Sala¹; Simone Gastaldon¹; Mario Liotti¹; Francesca Peressotti¹

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Introduction: Language comprehension is thought to rely on the pre-activation of linguistic representations based on context, facilitating the processing of upcoming input. Prediction-by-production models propose that linguistic prediction draws on processes and representations shared with language production. To test this proposal, we applied high-density transcranial alternating current stimulation (HD-tACS) targeting a brain oscillatory band and a brain region both known to be involved in language production, namely the beta band (13-30 Hz) and the left inferior frontal gyrus (IIFG).

Methods: Participants performed a lexical decision task in which target words were either predictable or non-predictable based on sentence context, across two separate sessions. In one session, participants received active HD-tACS at 20 Hz; in the other session, they received sham stimulation. In the first study (N = 19), stimulation was applied during task performance; in the second study (N = 18) the stimulation was administered prior to the task (20 min, 1.25 mA intensity).

Results: Across both studies, we did not observe stimulation effects on lexical decision response times.

Conclusion: Our findings do not support the involvement of beta-band activity within the IIFG in predictive processes. However, null results should be interpreted with caution: improvements in stimulation parameters (intensity, duration, number of repetitions, use of individualized peak frequencies) may yield more robust effects.

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Lunch and poster 1 / 617

Improving Olfactory Assessment: An Item Response Theory Analysis of the Sniffin' Sticks Test

Author: Eva Tolomeo¹

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The Sniffin' Sticks Test (SST) is one of the most widely used tools for assessing olfactory function in research and clinical settings. However, despite its widespread use, a detailed psychometric evaluation of its items remains limited. Understanding the item functioning within the identification subtest is crucial to ensure the test's reliability, validity, and applicability across different populations. This study applies Item Response Theory (IRT) to evaluate the psychometric properties of the SST's identification subtest, identifying potential weaknesses and areas for improvement in the measurement of olfactory function. 397 participants (60.5% female; mean age and SD = 44.62 +/- 18.33) completed the identification subtest of the SST. Item functioning was analyzed using a one-parameter (1PL) and a two-parameter (2PL) logistic IRT model, estimating item difficulty and discrimination parameters. Differential Item Functioning (DIF) analysis was conducted to investigate potential differences in item performance between males and females. Items with poor discrimination or extreme difficulty values were identified as candidates for revision or removal to enhance the overall measurement accuracy of the test. Model comparison revealed that the 2PL IRT model provided the best fit to the data. Results of the 2PL IRT analysis indicated that at least three items (leather, turpentine, and pineapple) had low discrimination parameters, while DIF analysis suggested that one item (anis) worked differently across sexes. In conclusion, the application of an IRT approach proved useful in enhancing the precision and reliability of the Sniffin' Sticks Test.

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Lunch and poster 1 / 524

Comunicazione attiva: miglioramenti pragmatici duraturi nell'invecchiamento sano grazie all'Advanced Cognitive Pragmatic Treatment

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Introduzione. L'invecchiamento comporta un declino progressivo di funzioni cognitive come memoria, attenzione, funzioni esecutive (FE) e Teoria della Mente (ToM), con impatti sull'abilità comunicativo-pragmatica. Tuttavia, la relazione tra queste abilità non è ancora completamente chiara. Nonostante l'influenza della pragmatica sull'autonomia e sulla qualità della vita, la ricerca sul suo declino nell'invecchiamento sano è ancora limitata.

Obiettivo dello studio. Valutare l'efficacia dell'Advanced Cognitive Pragmatic Treatment (Advanced-CPT) nel migliorare l'abilità pragmatica negli anziani sani. Ipotizziamo che il training migliori la performance comunicativo-pragmatica dei partecipanti, con un effetto specifico per la comunicazione e senza incrementare altre abilità cognitive, i.e. FE e ToM.

Metodo. 20 partecipanti anziani sani (5 uomini, 65-86 anni; $M=73.25\pm6.29$) hanno preso parte all'Advanced-CPT. Sono stati valutati prima (T0), dopo il training (T1) e dopo 3 mesi in follow-up (T2) con le forme equivalenti dell'Assessment Battery for Communication (ABaCo; Bosco et al., 2012) e nei compiti per la valutazione di FE e ToM.

Risultati. Un'ANOVA a misure ripetute ha mostrato un significativo effetto principale del tempo per ABaCo totale ($F(2,19)=11.18$, $p<.001$, $\eta^2=.55$): si evidenzia un miglioramento a T1 ($p<.001$), che rimane stabile al follow-up ($p=.004$). Una serie di t-test corretti con Bonferroni non ha rivelato nessun cambiamento significativo di FE e ToM ($p>.05$).

Conclusioni. L'Advanced-CPT è efficace nel migliorare l'abilità pragmatica negli anziani, con effetti duraturi nel tempo. Il miglioramento è specifico, in quanto non ha incrementato FE e ToM, evidenziando l'importanza di programmi mirati per sostenere la comunicazione nell'invecchiamento sano.

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Lunch and poster 1 / 519

Indagine multilivello dell'abilità pragmatica nella senilità: evidenze da persone con difficoltà cognitive riscontrate al MoCA e anziani normativi

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Introduzione. Il declino cognitivo nell'invecchiamento coinvolge memoria, funzioni esecutive e velocità di elaborazione. Per quanto riguarda la comunicazione, la ricerca si è concentrata principalmente sugli aspetti linguistici, trascurando la pragmatica, ossia l'uso del linguaggio in contesti sociali. Studi recenti hanno evidenziato un declino comunicativo-pragmatico nei disturbi neurodegenerativi e anche nell'invecchiamento sano; tuttavia, mancano studi che esplorino la pragmatica in persone con segni iniziali di decadimento cognitivo.

Obiettivo. Confrontare la prestazione pragmatica di anziani con difficoltà cognitive rilevate tramite il MoCA (DCrM) e coetanei con prestazione cognitiva entro i limiti di norma secondo il MoCA (CNTR). Ipotizziamo differenze tra i due gruppi sia nella comprensione che nella produzione comunicativa.

Metodo. Partecipanti: 17 individui con DCrM (MoCA $\leq$ 19.5) e 17 CNTR (MoCA $\geq$ 19.5) (cut-off: Conti et al., 2015), appaiati per età ($t(32)=0.09$, $p=0.927$) e scolarità ($t(32)=0.27$, $p=0.790$), sono stati valutati con la Batteria per l'Assessment della Comunicazione (ABaCo; Angeleri et al., 2015).

Risultati. L'ANOVA ha evidenziato un effetto significativo del gruppo (DCrM vs. CNTR) per ABaCo ($F(1,32)=21.55$, $p<.001$, $\eta^2=.40$), con prestazioni peggiori nei DCrM. La MANOVA ha confermato differenze significative in produzione ($F(1,32)=11.93$, $p=.002$, $\eta^2=.27$) e comprensione ($F(1,32)=13.26$, $p<.001$, $\eta^2=.29$), con punteggi inferiori nel gruppo DCrM.

Conclusioni. I risultati suggeriscono che il deterioramento cognitivo –anche iniziale – influisce sull'abilità comunicativo-pragmatica, compromettendone sia la comprensione che la produzione. Poiché la pragmatica è un'abilità cognitiva di alto livello, la sua valutazione potrebbe facilitare l'identificazione di segni iniziali di declino cognitivo, offrendo nuove prospettive per procedure di diagnosi e intervento precoci.

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No

Lunch and poster 1 / 577

TraIngles - Software di scoring automatico basato su Large Language Models di un compito di Teoria della Mente lungo il ciclo di vita

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Comprendere lo sviluppo e le differenze individuali nella teoria della mente (ToM; la capacità di attribuire stati mentali agli altri) richiede strumenti di misura solidi e facilmente applicabili su larga scala. I compiti a risposta aperta - come il "Triangles task" - forniscono indicatori validi della ToM, ma richiedono uno scoring manuale molto dispendioso in termini di tempo e formazione. Nel Traingles task, ai partecipanti viene chiesto di descrivere il contenuto di alcuni filmati muti raffiguranti due

triangoli animati; le risposte vengono poi valutate (tramite doppio-giudice) sulla base dell'indice di intenzionalità, che riflette il grado con cui il soggetto attribuisce stati mentali intenzionali (i.e., ToM) ai triangoli, con un punteggio da 0 a 5. Qui presentiamo TrAIngles, un software di scoring automatico delle risposte nel "Triangles task" sviluppato tramite un fine-tuning di large language models. TrAIngles è stato addestrato su un training set di 10,989 osservazioni raccolte da un campione di N = 581 partecipanti di lingua italiana, di età compresa tra 8 e 81 anni. I risultati hanno mostrato alta accuratezza e indici di affidabilità (Cohen's kappa, ICC, Krippendorff's alpha, Spearman's rho) consistentemente al di sopra delle soglie comunemente utilizzate per valutare la consistenza tra due giudici umani (i.e., > .80), anche quando considerate separatamente le varie fasce di età (bambini, adolescenti, giovani adulti, adulti e anziani). TrAIngles viene apertamente distribuito per l'utilizzo tramite codice e interfaccia grafica.

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No

Lunch and poster 1 / 549

THE AKABOOK PROJECT: FACILITATION IN TEXT COMPREHENSION

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Text comprehension is one of the most influential aspects of academic performance, particularly problematic for students coming from another culture. To read is an ecological training to improve the comprehension, but finding books that are both interesting and understandable by preadolescents and adolescents learning Italian as their L2 language is a challenge. The AKA Books Project objective is to offer books that are both engaging and capable of aiding comprehension, by editing the text or adding graphics to enhance the clarity of important aspects.

To evaluate the effectiveness of the strategies implemented by the AKA project we used the MT Tests in the school version (Cornoldi, Colpo, and Carretti, 2017) to assess text understanding. We involved 50 pupils attending the eighth grade. Each participant takes two different text comprehension tasks, one with the Italian standardized material and the other with the same material facilitated according to AKA procedures. By means of a 2x2 factorial design, we randomized separately for males and females the test version (standard or facilitated test first) and the type of test (final task for seventh grade or initial task for eighth grade first). We utilized non-parametric exact tests to compare the means of AKA and standard version.

As expected, we found a significant difference in comprehension only for L2 speakers (Mann-Whitney Exact Test, Two-tailed, Monte Carlo Method: $U=11.000$, $p=.056$, $d=1.000$), performing better in the AKA version of the test.

The effectiveness of AKA version is an important result both for research and educational projects.

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Lunch and poster 1 / 530**Cutting Time: How Editing Style and SMA Neuromodulation Shape Cinematic Time Perception****Author:** Alice Cancer¹**Co-authors:** Alessandro Antonietti ¹; Alessandro Daloia ²; Ruggero Eugeni ³; Stefania Balzarotti¹ *Dipartimento di Psicologia, Università Cattolica del Sacro Cuore, Milano*² *Università degli studi di Bergamo*³ *Dipartimento di Scienze della comunicazione e dello spettacolo, Università Cattolica del Sacro Cuore, Milano***Corresponding Author:** alice.cancer@unicatt.it

Cinematographic editing influences how viewers perceive time, yet the psychological and neural mechanisms underlying this phenomenon remain underexplored. This study examined the role of the supplementary motor area (SMA) in shaping temporal perception during film viewing using transcranial direct current stimulation (tDCS). Forty-eight participants were assigned to one of three tDCS conditions (anodal, cathodal, sham) targeting the SMA while watching video clips with varying editing styles (no editing, slow-paced, fast-paced). Participants rated perceived duration, time passage, action speed, and emotional engagement. Results showed that modulation of SMA excitability via tDCS significantly interacted with editing style, affecting temporal and motion-related judgments. These findings demonstrate the SMA's involvement in temporal perception during dynamic visual experiences; hence, they lead to the hypothesis that the experience of time in audiovisual media is linked to the perceptual management of the movements / transformations artificially introduced by the medium. Furthermore, they provide novel insight into how brain stimulation can shape the perception of time in film.

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Lunch and poster 1 / 613**The contribution of cerebellar oscillations during others' mental states inference: an EEG-guided High-Definition transcranial alternate current stimulation (tACS) study****Author:** Nicole Barbati¹**Co-authors:** Andrea Ciricugno ²; Chiara Ferrari ³; Zaira Cattaneo ¹¹ *Università degli studi di Bergamo*² *IRCCS C. Mondino Foundation*³ *Università degli studi di Pavia***Corresponding Author:** nicole.barbati@gmail.com

In recent years, neuroscientific research has established the crucial role of the cerebellum in social cognition processes. However, little is known about the specific cerebellar oscillatory frequencies involved in these processes, mostly due to the cerebellum's intrinsic characteristics that make traditional electrophysiological techniques (e.g., EEG and MEG) more complicated to apply. Critically, tACS, offers a unique opportunity to address these challenges.

To fill this gap, an experimental study was conducted to examine the effects of cerebellar high-definition tACS, synchronized to the individual peak of gamma frequency (IGF), determined through EEG recording, on social cognitive tasks. While receiving EEG-guided IGF tACS, healthy participants performed three tasks that required them to infer others' mental state (i.e., action intention, emotion, personality traits) based on contextual information. tACS was delivered, in separate sessions, over the right and the left posterolateral cerebellum (as well as in a sham condition) to provide insights into potential lateralization in the cerebellar contribution.

The results indicated that cerebellar IGF tACS significantly modulates participants' ability to infer others' mental states based on contextual information, with this modulation varying depending on the specific mental state being considered and the lateralization of the stimulation.

These findings provide new evidence on cerebellar oscillatory dynamics involved in social cognition processes, paving the way for potential therapeutic applications, particularly in treating affective and cognitive disorders.

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Lunch and poster 1 / 583

THE EFFECTS OF CIRCADIAN RHYTHMS AND SLEEP DEPRIVATION ON ATTENTION AND COGNITIVE FLEXIBILITY: EVIDENCE FROM THE ATTENTIONAL DEMANDS TASK

Author: Ilaria Di Pompeo¹

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This study explores the influence of circadian rhythms and total sleep deprivation on the components of attention - selective, divided, and switching - using the Attentional Demands Task (AD-Task).

The research consisted of two phases, during which subjective indices of sleepiness, vigor, and affect were monitored, in addition to sleep quality and individual chronotype. Regarding the AD-Task, performance was evaluated in speed (RTs) and accuracy (HIT RATE, FA RATE, d').

In the first phase, 32 participants (19f, age 24.9/3.14) were assessed by administering the AD-Task at four times of the day to analyze diurnal fluctuations in attentional performance. The results showed a progressive deterioration in performance in selective attention ($F_{3,93}=3.188$; $p=0.027$; $\eta^2p=0.093$) and a clear slowing of reaction times in the morning in divided attention ($F_{3,93}=7.3134$; $p<0.001$; $\eta^2p=0.191$), suggesting a significant influence of the circadian rhythm on the regulation of attentional resources.

In the second phase, 8 participants (4f, age 24.4/2.20) participated in a total sleep deprivation condition, completing the AD-Task on two consecutive days. The sleep loss induced a marked deterioration in performance, with slower reaction times ($F_{11,77}=1.948$, $p=0.046$, $\eta^2p=0.218$) and a reduction in discriminative ability (d' ; $F_{11,77}=13.438$, $p<.001$, $\eta^2p=0.657$), especially in the switching component. The vulnerability was due to the increased reliance on executive functions, with the prefrontal cortex being particularly affected by sleep deprivation.

These results confirm that circadian and homeostatic factors significantly affect attention and cognitive flexibility, further confirming the validity of the AD-Task as a reliable instrument for detecting these variations under ecologically relevant conditions.

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No

Lunch and poster 1 / 585

ASSESSMENT OF ATTENTIONAL COMPONENTS ACROSS THE LIFESPAN UNDER SINGLE-DEMAND AND SWITCHING-DEMAND CONDITIONS

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This study explored age-related changes in attentional components—selective attention, divided attention, and switching ability—using the Attentional Demands Task (AD-Task). Ninety-three healthy participants aged 18 to 70 were divided into three groups: young adults (25 f, age 21.1±2.47, range 19-29), middle-aged adults (20 f, age 55.7±3.05, range 50-60), and older adults (19 f, age 65.6±2.85, range 61-70).

The main aim was to assess attentional performance across age groups under single-demand and switching conditions. Cognitive health was screened using the Montreal Cognitive Assessment (MoCA), while sleep quality and daytime sleepiness were evaluated to control for confounding variables. The AD-Task allowed for measuring reaction times (RTs), target discrimination (d'), hit rate, and false alarms (FA) across selective and divided attention conditions.

As the age increases, a marked decline in attentional performance was observed: first, a progressive decrease in the ability to correctly discriminate stimuli, a sign of a weakening of inhibitory control, was seen ($F_{2,90}=40.9$, $p<.001$, $\eta^2p=0.476$). Selective attention appeared better than divided attention and more sensitive to task-switching ($F_{1,90}=14.174$, $p<.001$, $\eta^2p=0.136$). Divided attention, on the other hand, started to deteriorate already around the age of 50, probably due to the increased cognitive load required ($F_{2,90}=7.1790$, $p=0.001$, $\eta^2p=0.138$).

Overall, the findings suggest that aging affects attentional components differently: selective attention is more resilient but sensitive to switching, while divided attention declines earlier. The AD-Task proves effective in assessing multiple attentional functions, offering a comprehensive approach to studying cognitive aging.

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Lunch and poster 1 / 610

Visuospatial Skills and Intention Attribution: A Review of the Object Perspective-Taking Test and Santa Barbara Sense of Direction Questionnaire with Exploratory Graph Analysis and Applications to Autism

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Visual-spatial skills are fundamental for navigating the environment and performing daily activities. Individuals with Autism Spectrum Disorder (ASD) often exhibit atypical perceptual processing, especially regarding complex visual stimuli and visuo-perceptual abilities. This study aims to revise the Object Perspective Taking Test (OPT) and the Santa Barbara Sense of Direction Scale (SBSOD) in the Italian context and to compare visuospatial skills between individuals with Autism Spectrum Disorder (ASD) and individuals from the general population (Control Group; CG).

A total of 254 participants (mean age 21.53; 111 males and 143 females) were involved in the test revision process. Exploratory Graph Analysis (EGA) and Confirmatory Factor Analysis (CFA) confirmed satisfactory structural validity for both tests. The unidimensional structure of the OPT led to the proposal of a revised scale (OPT-r) composed of 9 items. The SBSOD-r revealed a bidimensional solution, distinguishing between spatial visualization and navigation skills. Significant negative correlations were found between OPT-r, spatial visualization, and the total SBSOD-r score. The tests revised were administered to 13 individuals with ASD (all males; mean age 23.46 ± 8.19 , mean IQ 105.04 ± 11.04) and 13 CG individuals (all males; mean age 24.31 ± 5.96 , mean IQ 113.1 ± 9.6), who were comparable for relevant variables such as IQ, age and education level. Preliminary results showed significant differences in OPT-r scores, indicating lower performance in the ASD group.

This study suggests the importance of visual-spatial skills in ASD, offering potential implications for clinical practice and interventions.

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No

Lunch and poster 1 / 559

Percezione del Rischio dell'Inquinamento Atmosferico e Accettazione delle Politiche Pubbliche: uno Studio Esplorativo su un Campione Rappresentativo Italiano

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Introduzione. Nonostante l'inquinamento atmosferico rappresenti uno dei principali rischi per la salute in Europa, posizionandosi come seconda causa di morte nel continente con oltre 300.000 decessi l'anno, vi è ancora poca consapevolezza del problema tra la popolazione. Inoltre, le politiche adottate per ridurre le emissioni e migliorare la qualità dell'aria sono spesso percepite dalla popolazione come eccessivamente onerose o poco efficaci. La scarsa consapevolezza dei livelli di inquinamento e dei fattori che lo determinano complica ulteriormente la situazione. **Metodi.** In questo studio pre-registrato e correlazionale indaghiamo le variabili associate all'accettazione delle politiche volte a ridurre l'inquinamento atmosferico. Lo studio è stato condotto su un campione rappresentativo della popolazione italiana (N = 1008) e si concentra sulla consapevolezza dell'inquinamento

atmosferico, la percezione del rischio, l'autoefficacia, i costi percepiti delle politiche e l'orientamento politico. **Risultati.** I risultati mostrano che una maggiore consapevolezza dell'inquinamento è associata a una percezione del rischio più elevata e ad un maggiore sostegno alle politiche pubbliche. Tuttavia, il sostegno diminuisce all'aumentare dei costi percepiti e con uno spostamento verso destra nell'orientamento politico. Inoltre, la percezione del rischio media parzialmente la relazione tra consapevolezza e accettazione delle politiche. **Conclusione.** Questo studio contribuisce ad ampliare la comprensione della percezione del rischio e dell'accettazione delle politiche ambientali nel contesto dell'inquinamento atmosferico, un ambito ancora poco indagato nella cultura occidentale. Inoltre, sensibilizzare la popolazione sugli effetti negativi dell'inquinamento atmosferico è fondamentale per incentivare l'adozione di comportamenti più responsabili e favorire l'accettazione delle politiche di mitigazione del rischio ambientale.

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Lunch and poster 1 / 708

How far does the context trick the mind? What placebos are teaching us about human perception and performance

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Placebo research has primarily focused on the pain domain, aiming to develop strategies that improve patients' conditions by enhancing clinical outcomes and preserving a positive therapeutic context. When this context is misperceived, however, it can instead trigger distress and fear. Building on this foundation, expanding placebo research into other domains could provide valuable insights into what aspects of human functioning are susceptible to contextual modulation and how these could be applied clinically across various conditions. The latest findings emerge from studies on motor performance and visual perception.

In examining how placebos can influence endurance and fatigue, researchers have found that motor units in the peripheral nervous system fire at different frequencies when sensory feedback is externally modulated to enhance motor output. Response to placebos can also show remarkable specificity: an arm that receives a placebo treatment can demonstrate greater resistance during exercise compared to the same person's untreated arm.

Moreover, recent findings indicate that the cognitive elaboration of a primary sensory modality (the visual system) and its related EEG potentials in occipital areas can be shaped by contextual factors. Participants who were told that their vision would improve correctly identified more letters.

These findings suggest that placebos can produce specific, measurable effects—ones that could be translated into clinical settings to support and enhance therapeutic outcomes. This raises intriguing questions: could localized placebos be more effective than those administered to the whole body? Could we dissect each sensory modality and determine which one to enhance based on the patients' needs?

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No

Lunch and poster 1 / 554

Innovazione digitale nella riabilitazione cognitiva della Sclerosi Multipla: il progetto REMOTE-MS

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Introduzione

La riabilitazione cognitiva è essenziale per migliorare la qualità della vita nelle persone con sclerosi multipla (PcSM). I modelli di teleriabilitazione sincrona, supportati da tecnologie digitali, offrono un'alternativa domiciliare per affrontare barriere logistiche, economiche e geografiche. Tuttavia, l'evidenza sulla loro efficacia per i deficit cognitivi nella SM è ancora limitata. Il progetto REMOTE-MS valuta la non inferiorità della teleriabilitazione cognitiva rispetto al trattamento convenzionale.

Metodo

Lo studio randomizzato controllato, in corso presso il Servizio di Riabilitazione AIMS di Genova, coinvolge PcSM assegnate a due gruppi: teleriabilitazione (EXP) e trattamento in presenza (CTRL). Entrambi svolgono 16 sedute cognitive sincrone (2 a settimana per 8 settimane) tramite l'app MedicoAmico-Pro (Khymeia, Italia). Al gruppo EXP è fornito un tablet per il collegamento da remoto col neuropsicologo. Le valutazioni avvengono a T0, T1 e T2. L'outcome primario è il Symbol Digit Modalities Test (SDMT); outcome secondari sono CVLT2, BVMTR, MFIS, 9HPT, AMSQ, HADS, e questionari su usabilità e soddisfazione (SUS, CSQ-8). Le analisi RM-ANOVA confrontano i gruppi ($p < 0.05$).

Risultati

I dati preliminari su 14 partecipanti (età media $55,28 \pm 11,77$; EDSS medio $5,42 \pm 1,64$) mostrano un miglioramento significativo nel dominio della memoria visuo-spaziale (BVMTR) in entrambi i gruppi. L'usabilità percepita è risultata moderata, maggiore nel gruppo in presenza; la soddisfazione alta in entrambi.

Conclusioni

La teleriabilitazione sincrona mostra risultati incoraggianti e potrebbe rappresentare un'alternativa efficace alla riabilitazione convenzionale, da confermare su un campione più ampio.

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No

Lunch and poster 1 / 580

Does judging orientation elicits Spatial-Numerical Associations? Assessing the neural overlap hypothesis and automaticity of number processing

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According to the neural overlap hypothesis (Fias et al., 2001) magnitude information is automatically extracted from digits when there is a sufficient degree of neural overlap of structures dedicated to the processing of relevant and irrelevant information. Specifically, since the semantic information of numbers is processed in parietal areas, processing a visual feature with high parietal involvement (orientation) will interfere with number magnitude while this interference should be limited when processing features with minimal parietal involvement (shape or colour). This seems to be confirmed by the fact that previous studies found Spatial-Numerical Associations (SNA) with orientation tasks but not (or very limited evidence) with shape or colour discrimination tasks. In the present study, we aim to replicate the orientation task by using both digits and letters in separate conditions. Based on the neural overlap hypothesis, a SNARC effect should be found only with digits while it should be weak or absent with letters, due to a low overlap between these stimuli and parietal areas.

A sample of 66 university students performed a line orientation judgement task (superimposed vertical vs. horizontal lines) on numbers and letters in separate conditions. Responses were provided with lateralized left and right keys.

Results revealed no SNAs with both numbers and letters, casting doubts on the neural overlap hypothesis and suggesting that SNAs might be detected in perceptual tasks only by testing extremely large samples (Roth et al., 2025) or by making magnitude information task relevant (Shaki & Fischer, 2023).

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Lunch and poster 1 / 623

Neural categorization of hands from infancy to adulthood.

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Introduction. Early socio-cognitive development relies on the ability to discriminate and categorize social stimuli. Infants' preference for faces is well-known, engaging brain regions within occipito-temporal cortex and right-lateralized responses by 4 months (de Heering & Rossion, 2015). Hands also play a crucial role in social communication and are salient from the first months of life. By 8 months, the right temporal cortex differentiates human from mechanical hands (Biondi et al., 2016). Yet, the developmental trajectory of the neural categorization of hands is unexplored.

Methods. We investigated this using a Fast Periodic Visual Stimulation oddball paradigm coupled with EEG recording in a group of adults (N=33), 4- (N=45) and 9-month-olds (N=34). Participants viewed naturalistic object images at a rapid rate (6 Hz), with hand images presented every fifth stimulus (1.2 Hz), generating a categorical change.

Results. All three age groups showed strong visual processing at 6Hz (SNR>1.7, z-scores >7.42, ps<0.001). Importantly, the categorization response (1.2Hz) followed a developmental pattern. Adults showed robust occipital and parieto-occipital responses (1st-4th harmonics, SNR>1.97, z-scores >25, ps<.001), 9-month-olds right-occipital response (1st-3rd harmonics, SNR>1.8, z-scores >16, ps<.001), while no categorization was observed in 4-month-olds (all ps>.05).

Discussion. These findings pave the way for future investigations into the precise mechanisms and

developmental factors that shape the neural representation of hands. They suggest that hand categorization becomes increasingly specialized and distributed with age. While 9-month-olds show emerging perceptual categorization, 4-month-olds may require further sensorimotor experience. Ongoing analyses will assess the role of grasping skills in shaping this developmental trajectory.

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Lunch and poster 1 / 673

Stimolazione cerebrale non invasiva nel dolore cronico primario: una metanalisi di studi clinici controllati randomizzati

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Introduzione: Il dolore cronico primario (Chronic Primary Pain, CPP) è una categoria diagnostica proposta recentemente che comprende condizioni di dolore cronico prive di segni clinici evidenti o di una chiara origine eziopatogenetica. Questi disturbi sembrano condividere un meccanismo cerebrale comune, noto come sensibilizzazione centrale, in cui i neuroni nocicettivi diventano iper-reattivi anche a stimoli dolorosi sottosoglia, creando un'ipersensibilità al dolore. Le tecniche di stimolazione cerebrale non invasiva (NIBS) rappresentano una promettente opzione terapeutica per modulare l'attività e connettività cerebrale maladattiva. In questa metanalisi vogliamo indagare se le NIBS possano migliorare i tre sintomi centrali del CPP: intensità del dolore, sofferenza emotiva e disabilità funzionale.

Metodo: Seguendo le linee guida PRISMA, abbiamo incluso 35 trial clinici randomizzati (874 partecipanti ricevevano una stimolazione reale, 713 una stimolazione sham/placebo). Analisi indipendenti sono state effettuate sulla sintomatologia post-trattamento e al follow-up di un mese.

Risultati: La stimolazione reale ha migliorato i sintomi del CPP subito dopo il trattamento, con benefici per intensità del dolore e disabilità funzionale mantenuti anche al follow-up. La meta-regressione ha evidenziato che una durata maggiore del disturbo era associata ad una minore efficacia dell'intervento NIBS, mentre un numero più elevato di sessioni di stimolazione era collegato ad un miglioramento del dolore al follow-up.

Conclusioni: I risultati indicano che le NIBS possono migliorare i sintomi del CPP a breve e medio termine, sottolineando la necessità di ulteriori studi per standardizzare i protocolli e valutare se l'integrazione con altri trattamenti possa potenziarne gli effetti in termini di efficacia e durata.

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Lunch and poster 1 / 522

Abilità pragmatica e Declino Cognitivo Soggettivo: uno studio longitudinale nell'invecchiamento sano

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Introduzione. Nell'invecchiamento sano, le abilità comunicative possono subire un deterioramento che non riguarda solo gli aspetti linguistici di base, ma anche la pragmatica, ovvero la capacità di usare il linguaggio e altri mezzi espressivi in modo adeguato al contesto sociale. Sebbene la letteratura suggerisca un declino pragmatico legato all'invecchiamento, mancano studi longitudinali che ne traccino l'evoluzione nel tempo.

Obiettivi. Valutare longitudinalmente l'abilità pragmatica –sia in comprensione che in produzione –in un gruppo di anziani cognitivamente sani, indagando al contempo l'associazione tra variazioni pragmatiche e livelli di Declino Cognitivo Soggettivo (DCS).

Metodo. Dodici partecipanti (65–85), con funzionamento cognitivo nella norma al tempo iniziale (MoCA $\geq$ 19.5), sono stati valutati in due momenti (T0 e T1: intervallo medio=5,33 anni) attraverso le forme equivalenti della Batteria per l'Assessment della Comunicazione (ABaCo; Angeleri et al., 2015). Al T1 è stato somministrato il Multidimensional Assessment of Subjective Cognitive Decline (MASCoD; Maffoni et al., 2022) per misurare il DCS.

Risultati. Il test di Wilcoxon ha rilevato un peggioramento significativo nella performance pragmatica globale ($z=2.43$, $p=.015$, $r=.70$) e nella comprensione ($z=3.06$, $p=.004$, $r=.88$), mentre la produzione non ha mostrato cambiamenti significativi ($p=.338$). Una correlazione negativa significativa tra punteggi MASCoD e cambiamento nella produzione ($r_{(10)}=-.66$, $p=.019$) indica che un DCS più marcato si associa a un maggior declino in produzione.

Conclusioni. Le abilità pragmatiche sembrano vulnerabili anche in condizioni di invecchiamento sano, con un impatto più evidente sulla comprensione. La relazione con il DCS suggerisce che la pragmatica potrebbe costituire un indicatore precoce e sensibile del decadimento cognitivo.

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Lunch and poster 1 / 670

Riconoscimento aptico delle sezioni trasversali in persone con e senza disabilità visiva

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La vista svolge un ruolo cruciale nella rappresentazione dello spazio. Il compito di “cross-sectioning” richiede di identificare la forma interna bidimensionale di solidi 3D, tagliati trasversalmente da un piano. Cognitivamente, questo compito implica una solida rappresentazione spaziale degli oggetti e la manipolazione mentale di figure bidimensionali e tridimensionali. Il presente studio ha l'obiettivo di indagare la rappresentazione spaziale tattile degli oggetti in persone adulte con disabilità visiva, utilizzando una versione tattile del Santa Barbara Solid Test stampata in 3D. Il campione comprende quattro gruppi: due di partecipanti non vedenti, uno composto da persone diventate cieche precocemente, prima dei 6 anni ($N=11$), e l'altro da partecipanti diventati ciechi più tardi, dopo i 6 anni ($N=8$). Gli altri due gruppi sono costituiti da partecipanti ipovedenti ($N=5$, acuità visiva tra 3/10 e 1/20) e vedenti ($N=13$), che svolgevano il compito bendati. Ai partecipanti è stato chiesto di esplorare

apticamente le sezioni trasversali di solidi stampati in 3D (n=10 prove) e di identificare la sezione corretta tra quattro opzioni. È stata eseguita una regressione logistica considerando l'accuratezza (corretto vs errato) come esito e il gruppo di appartenenza come predittore. L'appartenenza al gruppo è risultata un predittore significativo per l'esecuzione del compito, con i non vedenti precoci che mostravano una minore probabilità di identificare la sezione corretta rispetto agli altri gruppi. In linea con ricerche precedenti, i risultati suggeriscono che la privazione visiva precoce influisce sullo sviluppo delle abilità spaziali aptiche, evidenziando la necessità di programmi riabilitativi, in particolare nell'ambito del ragionamento spaziale multisensoriale.

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No

Lunch and poster 1 / 696

The Relationship Between Interoceptive Awareness and Sleep Paralysis

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Sleep paralysis (SP) is a parasomnia associated with REM sleep, marked by a temporary inability to move during the transition into or out of sleep, often accompanied by vivid and sometimes frightening hallucinations. While SP is a known symptom in narcolepsy, it can also occur in otherwise healthy individuals as isolated sleep paralysis (ISP), where it remains a distressing yet harmless experience. This study explored the occurrence and characteristics of SP throughout different stages of life within a representative sample of the Italian population, using a web-based survey. The Unusual Sleep Experience Questionnaire was utilized to examine the frequency, phenomenology, cognitive aspects, and emotional impact of SP episodes. Among the 210 respondents (64.4% women, 34.8% men; average age 44 ± 14.5 years), 26.2% (n = 55) reported experiencing at least one episode of SP. The most common physical symptoms aligned with REM-related muscle atonia and included speech paralysis, eye immobility, and tingling sensations. On the cognitive level, many reported sensing an external presence and fearing imminent death. Contrary to earlier findings, those affected by SP did not display significantly worse sleep quality, elevated stress levels, or greater trait anxiety. However, they did show higher levels of pre-sleep arousal, insomnia symptoms, disruptive nocturnal behaviors, and somatic hyper-awareness. Uniquely, this research also examined the role of interoception in SP, discovering that affected individuals reported heightened awareness and regulation of internal bodily states. These insights offer a new perspective on potential mechanisms underlying SP and open avenues for further investigation.

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Lunch and poster 1 / 695

Central and peripheral components of the placebo effect on motor performance

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Introduction: The effect of placebos on task-related physical fatigue and brain activity remains underexplored yet relevant to dissect. This study investigates the neurophysiological mechanisms underlying motor placebo effects and their impact on fatigue at both central and peripheral levels, using Readiness Potential (RP) as an electrophysiological (EEG) central measure and Median Frequency (MDF) as an electromyographical (EMG) peripheral one.

Methods: Participants (n=48) were randomly assigned to three groups: Natural History, Learning, and Expectation Groups. The motor task involved the repetitive lifting of a load across three sessions: Baseline, Reinforced Expectation, and Test. Placebo groups were deceptively informed that an electrical stimulation applied to their wrist would reduce fatigue. The Learning Group received the sham treatment during the Reinforced Expectation Session, along with a hidden reduction of the lifted load. In the Expectation Group, the same load reduction was applied, but the sham treatment was administered only during the Test Session.

Results: Placebo groups subjectively reported significantly lower fatigue than the Natural History Group. EEG results showed that the Natural History Group exhibited an increase in RP, whereas the Learning Group showed a reduction in RP, indicating a decrease in central fatigue. No significant changes were observed in the RP for the Expectation Group. EMG analysis revealed an increase in MDF only in the Learning Group, suggesting reduced peripheral fatigue, an effect absent in the Expectation Group.

Conclusion: These findings suggest that placebo effects influence both central and peripheral fatigue, but conditioning procedures are necessary to modulate peripheral mechanisms.

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No

Keynote 1: Viviana Betti / 999

The Spontaneous Brain: Mapping the Intrinsic Foundations of Behaviour and its Dynamic Changes.

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When the brain lies at rest, in the absence of external input or tasks, spontaneous (intrinsic) brain connectivity is thought to represent a prior of relevant stimuli or behaviours. How does it apply to the hand, e.g., the main means of interaction with the external environment? Large patches of the cerebral cortex are dedicated to representing the human hand; these regions exhibit patterns of structured spatiotemporal correlation even at rest. Building on previous neuroimaging studies showing alignment between spontaneously emerging patterns and those evoked by natural stimuli, then the challenge is to understand if an internal model of frequent hand movements and stimuli is encoded in the resting brain. Understanding the existence of intrinsic foundations of behaviour offers the opportunity to explore its resilience to change. These issues open the way to exploring the stability and flexibility of functional brain architecture, behavior, and cognition in response to extreme manipulation of the body. These findings apply to the development of next-generation prostheses designed not static

replicas of the body, but adaptive extensions of the self, in resonance with cognitive, motor, affective, and cultural dimensions.

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Emotions and motivation 1 / 499

From Structure to Behavior: Hypothalamic Subregions Volumes Predict Childhood Conduct Issues

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Introduction: The hypothalamus is central to neuroendocrine, emotional, and behavioral regulation. While its role in stress and aggression—e.g., HPA axis—is established, its structural involvement in childhood conduct problems remains underexplored. This study examined whether hypothalamic subregions show volumetric differences in adults with a history of such problems and whether these features support predictive modeling.

Methods: Structural MRI data of 630 adults (mean age $\approx$ 29, 290 males) from the HCP Young Adult dataset were analyzed. Volumes of 10 hypothalamic subregions and whole hypothalami were extracted using FreeSurfer7.2. Participants were classified based on the presence ($n = 221$) or absence ($n = 409$) of childhood conduct problems. These were assessed via a SSAGA item asking whether, before age 15, individuals frequently got into trouble for behaviors like lying, stealing, skipping school, or fighting. Statistical comparisons were followed by logistic regression and penalized models, adjusting for age, sex, and intracranial volume.

Results: Individuals with conduct problems showed larger volumes in the left tubular inferior and posterior, right tubular superior, and bilateral hypothalami ($p < .05$). The logistic model achieved an AUC of 0.715 (sensitivity $\approx$ 69%, specificity $\approx$ 66%), with sex as the strongest predictor ($OR = 4.93$). LASSO identified left anterior inferior, left posterior, and right tubular superior as informative.

Conclusions: These findings suggest that hypothalamic subregions linked to arousal, motivation, and autonomic control are structurally altered in individuals with childhood conduct problems. Future studies should investigate broader brain networks and environmental factors to elucidate the origins of early conduct disturbances.

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Social Cognition / 558

The Relationship Between Personality Traits and Evaluative Conditioning

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Evaluative Conditioning (EC) is a type of evaluative learning, defined as the change in valence of neutral stimuli (Conditioned Stimuli, CSs) due to spatiotemporal pairings with positive or negative valenced stimuli (Unconditioned Stimuli, USs). This EC effect is moderated by the contingency memory of CS-US pairs, without which there is little or no EC effect. Previous studies have shown that personality traits, assessed through the Big Five and HEXACO-PI measures, can moderate EC effects. In particular, high levels of Neuroticism - specifically its Anxiety facet - and Agreeableness were associated with larger EC effects. The present study investigated the relationship between EC and personality traits, assessing them through the NP100 questionnaire, a measure of more specific personality characteristics at the item level, called nuances, that can also be aggregated to reflect the six factors of the HEXACO-PI. Participants (N = 350) completed the personality questionnaire, the EC procedure, and a contingency memory task. The six factors reflecting HEXACO-PI personality traits were extracted from the NP100 items through a principal component analysis. Analyses confirmed the EC effect and the moderation role of contingency memory, personality traits, and their interaction on the effect of US valence on CS evaluations. The results are relevant for both personality and learning fields.

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No

Memory / 540

Two minds don't boost together: Target detection enhances the recognition of self-relevant, but not other-relevant, items

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In the Attentional Boost Effect (ABE) participants recognize stimuli paired with targets to which they responded during the encoding phase better than stimuli paired with distractors that they ignored. Based on previous evidence indicating that the simulation of a motor action can enhance the incidental encoding of study words (the Joint Memory Effect: JME), we asked whether the ABE could be likewise triggered by simply observing the responses provided by a co-actor in a joint-action condition. In Experiment 1, pairs of participants studied words paired with self-relevant squares (to which they were to respond), other-relevant squares (to which the co-actor responded) and non-task-relevant squares (to which neither of them responded). Experiment 2 used a variation of this paradigm aimed at reducing the possibility that participants disengaged their attention from the encoding of other-relevant words, in which turns were dictated by the colors of the words (rather than by the colors of the squares). Experiments 1 and 2 used recognition memory, the standard assessment of the ABE. Experiment 3 examined the generalizability of the results to a final test of free recall. In all experiments, the results converged in showing that the ABE was significant for self-relevant trials (participants recognized self-relevant words better than non-task-relevant words), but not for other-relevant trials (participants recognized other-relevant and non-task-relevant words equally well). The findings are discussed in terms of revised version of the dual-task interaction account of the ABE, and the social-epistemic account of the JME.

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No

Methodology 1 / 495

Scientific Reasoning Scale in Italy: Validation Studies

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Validating a scale across different cultural contexts is crucial for enhancing the construct's cross-national applicability and supporting its validity, especially regarding generalizability in varied administrative settings. Defining constructs is essential for developing psychological theories, as a reliable measurement is needed before empirical study can occur. Construct validation, gathering evidence that the instruments created by scientists actually measure the constructs that scientists claim they measure, is a necessary part of the research process.

This study presents the validation of the Italian version of the Scientific Reasoning Scale (SRS), addressing the lack of a standardized measure of scientific reasoning in the Italian context. We employed a multi-study, multi-method approach, including back-translation, pilot testing, expert interviews, cognitive interviews, and Structural Equation Modeling, to evaluate the psychometric properties and validate the scale. A representative sample of 897 adult Italians participated.

Consistent with contemporary view of validity, diverse validity evidence was collected. Confirmatory Factor Analysis confirmed the scale's unidimensional structure and good composite reliability. Multi-group analyses revealed full measurement invariance across gender, age, employment status, political orientation, and religious affiliation, enhancing generalizability and minimizing measurement bias. Notably, higher-educated individuals scored better on the SRS. Convergent validity was supported by correlations with the Cognitive Reflection Test and the Probabilistic Reasoning Scale, while criterion-related validity was established through associations with climate change awareness and various paranormal health beliefs.

The validated Italian SRS is a valuable tool for researching scientific reasoning and contributes to the global effort to improve scientific literacy, aligning with the goals of PISA 2025.

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Attention / Language / 943

L'impatto della privazione visiva sui confini dello spazio peripersonale

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Lo spazio peripersonale (PPS) è quella porzione di spazio che circonda il corpo, all'interno del quale occorrono effetti di integrazione multisensoriale per interagire con l'ambiente e reazioni difensive per proteggere il proprio corpo.

Il presente studio esplora l'impatto della deprivazione visiva su queste due componenti del PPS, integrativa e difensiva. Gli effetti di integrazione multisensoriale sono stati valutati mediante un paradigma di Auditory Enhancement of Touch (AET), mentre le reazioni difensive tramite il paradigma dell'Hand Blink Reflex (HBR) in tre gruppi di partecipanti: non-vedenti congeniti e acquisiti, vedenti bendati.

Nel paradigma di AET, i risultati mostrano un effetto di integrazione multisensoriale in tutti i gruppi ($p < 0.05$), con risposte più veloci al tatto quando associato a un suono. Nei controlli, si osserva anche una modulazione spaziale di questo effetto, con velocità di risposta maggiore quando il suono è vicino al distretto corporeo che riceve lo stimolo tattile. Nei non-vedenti congeniti e acquisiti, invece, la facilitazione della risposta è simile per suoni lontani e vicini al corpo, suggerendo un'espansione del PPS integrativo in entrambi i modelli di deprivazione visiva. Al contrario, i confini del PPS difensivo risultano più estesi nei non-vedenti congeniti rispetto ai tardivi e ai vedenti ($p < 0.05$), con risposte aumentate per gli stimoli minacciosi che occorrono lontano dal corpo.

Seppure preliminari, questi risultati suggeriscono un diverso ruolo della visione nel dare forma alle due componenti del PPS, suggerendo il ruolo di un periodo critico in cui la deprivazione visiva altera in modo specifico il PPS difensivo.

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Attention / Language / 987

Inhibition Of Direction: IOD

Authors: Allegra Indraccolo¹; Christian De Marco¹; Claudia Del Gatto¹; Ilenia Lanni^{None}; Riccardo Brunetti¹

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Inhibition Of Return (IOR) is a well-known attentional mechanism that slows responses to previously attended spatial locations, promoting exploration of new areas during visual search. For instance, when searching for car keys on a cluttered desk, we instinctively avoid rechecking places we have just looked at, reflecting the adaptive role of IOR.

A recent study suggests that IOR may not only operate on spatial locations but also affect search direction: once a target is identified, observers tend to look for the next target in a different direction, avoiding the previously followed trajectory.

To examine this, we conducted an eye-tracking study using circular visual displays. Each display consisted of a central fixation cross and a ring of stimuli (5 cm radius) —seven letters, one number. Participants were instructed to find the number with their eyes and fixate on it for 1s to proceed. Upon detection, a second, similar circle appeared, aligned in the same direction as the first target. In this second display, the new target could appear in the same direction as the previous one, or deviate from it by 45°, 90°, 135°, or 180°. We analysed the entry times into the AOI where the second target appeared. Results showed that targets appearing in directions similar to the previous direction, required significantly more time to be identified, compared to those in the opposite direction.

These findings support the existence of a novel inhibitory phenomenon potentially in conflict with IOR: Inhibition Of Direction, extending traditional IOR to include search trajectories.

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No

Emotions and motivation 1 / 494

EEG correlates of color hue preference

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Introduction and aim

Color research has mainly used self-report ratings to assess color pleasantness. Since a few studies have also identified different electrocortical responses to various colors (Khadir et al., 2023; Roy et al., 2021), in this study we aimed to clarify the relationship between subjective pleasantness ratings and the corresponding electrocortical activity for single colors varying in hue.

Methods

Twenty-five participants completed a two-part experiment: (a) rating the pleasantness of 8 single colors on a 1-5 Likert scale, (b) viewing the same colors randomly presented across 160 trials during EEG recording. All colors were derived from CIELCh color space with constant chroma ($C = 80$) and luminance ($L = 50$), but varying hue angles (h°) at 45° intervals starting from 30° .

Results and conclusions

Pleasantness ratings revealed a significant main effect of Color ($p = .007$), with no significant effects of Sex or Color (x) Sex interaction. Post-hoc analyses (Holm-corrected) revealed that Blue (1) was significantly preferred over Brown ($p = 0.01$). ERP analysis (0-600 ms) demonstrated distinct neural responses to the different colors, particularly during early visual processing (75-200 ms). Red elicited higher amplitudes in N75 and N145 components, while green showed lower amplitudes in P100, P200, and N145 components. These color-specific neural responses were most prominent across parietal and occipital electrodes (Pz, POz, Oz, P2). The preference for blue hues and the antithetical role of the red-green dichotomy in influencing EEG oscillations are interpreted in accordance with the Ecological Valence Theory (EVT), formulated by Palmer and Schloss (2010).

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Memory / 541

Attentional boost effect and pattern separation: A dissociation between visual and verbal material

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The Attentional Boost Effect (ABE) refers to the finding that images encoded with to-be-responded targets are later remembered more accurately than images encoded with to-be-ignored distractors.

The Dual-Task Interaction Model suggests that the ABE produces a transient increase in the amount of perceptual resources available to process target-associated images. With visual materials, this assumption has been strongly supported by previous data showing that the ABE enhances pattern separation. In the present study we sought to determine whether this facilitation could be extended to verbal materials. Furthermore, the use of words allowed us to disentangle the impact of the ABE on perceptual and conceptual pattern separation. The results showed that the ABE enhanced pattern separation with visual materials (Experiment 1), but not with verbal materials (Experiments 2-5), irrespective of the nature of the processes involved. In addition, only with visual materials, the ABE-related enhancement of pattern separation was accompanied by an increase in the tendency to incorrectly judge similar lures as identical to studied images. Our data are consistent with the idea that, in the case of verbal materials, the ABE operates at the level of abstract, amodal representations.

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No

Social Cognition / 846

Political orientation and belief in climate change conspiracies: A path model of misinformation belief and exposition

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Even though recent reports from the Intergovernmental Panel on Climate Change highlight how human-caused climate change has already caused widespread damage to societies worldwide, conspiracy theories questioning its existence, causes, and consequences continue to abound. These narratives range from claims that climate change is a hoax or the result of systematic scientific fraud to elaborate theories suggesting that governments manipulate the weather through geoengineering. Psychological research has increasingly explored how cognitive, ideological, and social factors contribute to the endorsement of such beliefs. In this study, we examined how individuals' political orientation and belief in climate change conspiracy theories influence their belief in fake news related to climate change. A total of 460 participants completed an online questionnaire assessing political beliefs, belief in climate change conspiracy theories, and exposure to and belief in fake news regarding climate change. Path analysis revealed that a more conservative political orientation predicted greater exposure to conspiracy narratives and higher belief in fake news by indirectly enhancing adherence to conspiracy beliefs. Exposure may reflect both personal interest and engagement in online environments where homophily processes amplify interactions with ideologically similar content, reinforcing the development of echo chambers. Our findings highlight the pivotal role of ideological orientation and conspiratorial beliefs in shaping individuals' vulnerability to climate change misinformation, emphasizing the need for interventions that enhance critical thinking, reduce conspiracy beliefs, and promote media literacy to foster informed public discourse.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Emotions and motivation 1 / 542

Would You Donate to a Researcher at an Amusement Park? The backfiring role of incongruent background in a charity appeal

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Although various studies have investigated the factors contributing to a successful donation appeal, most have only focused on the characteristics of the donation recipient. For instance, emotional expressions and identifiable victims can increase generosity. The role of background in shaping donation decisions remains instead mostly underexplored. Understanding how visual context influences donation is critical, as background elements can enhance perceived impact, a key driver of prosocial behavior. This research addresses this gap by investigating whether the congruence of the background in charity appeals affects motivation to donate through perceived impact and congruence. Across two pre-registered, experimental studies (Study 1, N = 168; Study 2, N = 197), participants were randomly assigned between-subject to view a charity appeal showing a researcher with a congruent background (a scientific lab), an incongruent background (an amusement park), or no background. The results showed that participants exposed to an incongruent background reported a lower perceived impact of the donation and lower motivation to donate than those exposed to no background or a congruent one (highest perceived impact). Structural equation models showed that the effect of the background (congruent vs. both incongruent and no background) on motivation to donate was serially mediated by perceived background congruence and perceived impact in both studies. Additionally, we developed and validated a “Congruency Index” to measure how well the background of a charity appeal aligns with the cause’s message. Our findings can help to design more effective charity campaigns, highlighting the importance of visual alignment in enhancing donations.

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If you’re submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Attention / Language / 932

The Perceptual Limit in the Development of Reading Speed

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Reading development depends on the integration of perceptual and cognitive processes. Visual crowding—interference from nearby flankers that impairs target recognition—correlates with reading speed in both typical and dyslexic readers (Pelli et al., 2007; Pelli, 2016; Spinelli et al., 2001;

Martelli et al., 2009). Although research suggests that crowding affects reading acquisition, its developmental trajectory remains unclear. This study aims to clarify how crowding evolves during childhood and relates to reading fluency.

We assessed visual acuity, foveal and peripheral crowding, and reading speed (via functional reading tests and the Rapid Serial Visual Presentation procedure) in 133 Italian children from first to fifth grade, all with age-appropriate reading skills.

Testing was conducted using *EasyEyes* (Pelli, 2021), a browser-based tool for precise crowding measurement.

Grade level was negatively correlated with peripheral crowding in both the left ($r = -0.323$, $p = .002$) and right ($r = -0.384$, $p < .001$) visual fields, and with foveal crowding ($r = -0.256$, $p = .008$), indicating a developmental reduction. Grade also positively correlated with reading speed ($r = 0.362$, $p < .001$). Additionally, reading speed (words per minute) negatively correlated with foveal acuity ($r = -0.252$, $p = .009$) and right-field peripheral crowding ($r = -0.223$, $p = .021$).

These findings suggest that both foveal and peripheral crowding decrease with age and are linked to improved reading, underscoring the role of visual crowding in the development of fluent reading.

Keywords: (*Reading development; perceptual integration*)

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Social Cognition / 506

Comparing ideal and real group mental representations: a multimodal hyperscanning study

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Group decision-making involves both cognitive and emotional processes shaped by how individuals mentally represent their group –either ideally or realistically. This study examined how discussing these representations impacts decision-making, as well as neural and autonomic activity. Using a multimodal hyperscanning approach with electroencephalography (EEG), functional Near-Infrared Spectroscopy (fNIRS) and biofeedback (BIO), 28 participants paired in dyads discussed group decisions while self-representing either an ideal (Phase 1) or real group (Phase 2). EEG activity (frequency bands: delta, theta, alpha, beta, gamma), hemodynamic responses, and autonomic markers (e.g., heart rate variability, HRV) were recorded and analyzed at both individual and dyadic levels. At the individual level, results showed increased frontal low-frequency EEG band activity during both interactions, indicating emotional engagement. When mentally self-representing a real group, participants exhibited higher beta/gamma activity and deoxygenated hemoglobin (HHb) levels, reflecting greater cognitive and perspective-taking effort. Greater HRV while self-representing an ideal group suggested enhanced emotional regulation. Dyadic Euclidean distance analysis showed higher delta band dissimilarity, reflecting shared emotional and cognitive engagement regardless of group mental representation. Beta band dissimilarity increased when mentally self-representing real group, suggesting elevated attentional and executive control demands. This study highlights the value of a multimodal hyperscanning paradigm in capturing the complex interplay of brain and

physiological responses during communication exchange. Findings contribute to a deeper understanding of decision-making and may promote interventions to foster more effective group interactions.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Memory / 543

Raccontare il proprio passato e ricordarlo sono la stessa cosa? Uno studio sugli effetti dell'ordine di somministrazione di strumenti per la valutazione della memoria autobiografica

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Gli studi contemporanei sulla memoria autobiografica che prevedono la somministrazione congiunta di compiti narrativi e questionari self-report sono accomunati dal fatto che la sequenza con cui vengono somministrate queste due tipologie di strumenti è sempre la stessa: in una prima fase, i partecipanti formulano un racconto autobiografico e solo successivamente procedono alla compilazione di uno o più questionari sulle caratteristiche del ricordo narrato. Il presente studio intende valutare se il cambiamento dell'ordine di somministrazione di questi strumenti possa avere un effetto sui ricordi e le narrazioni dei soggetti che partecipano a queste ricerche. Abbiamo chiesto a due gruppi di studenti universitari, appaiati per genere ed età, di rievocare un evento della loro vita. I partecipanti appartenenti al "gruppo narrazione prima" (N = 149) avevano come primo compito quello di raccontare per iscritto l'evento; una volta terminata la narrazione, essi dovevano compilare due questionari che valutavano rispettivamente la fenomenologia del ricordo e la centralità dell'evento rievocato. I partecipanti appartenenti al "gruppo questionari prima" (N = 152) dovevano svolgere gli stessi compiti, ma in ordine inverso: prima dovevano compilare i questionari e successivamente dovevano formulare il racconto dell'evento. I risultati hanno mostrato che, rispetto ai partecipanti del "gruppo narrazione prima", quelli del "gruppo questionari prima" avevano formulato delle narrazioni più lunghe e con un maggior numero di dettagli. Tuttavia, sia gli indicatori sull'organizzazione delle narrazioni sia le misure del ricordo ricavate dai questionari non variavano in modo significativo tra i due gruppi. Verranno discusse le implicazioni teoriche, empiriche e pratiche dei risultati.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Methodology 1 / 586

Development and Validation of the Italian Dictionary for LIWC-22

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Introduction

The Linguistic Inquiry and Word Count (LIWC) is a widely adopted tool for the psychometric analysis of language in psychological, social, and clinical contexts. The recently updated LIWC-22 English version introduces new psychological categories, a more flexible hierarchical structure, and an expanded dictionary. However, the last official Italian version dates back to 2007—prior to major shifts in language use, particularly in digital communication. This study addresses this gap by validating the Italian adaptation of LIWC-22 for use in contemporary written language, with the goal of offering a reliable and context-sensitive tool for researchers in Italian-speaking settings.

Method

A semi-automated approach was used to translate LIWC-22 categories into Italian, integrating human expertise with digital linguistic resources (e.g., Reverso Context, Italian morphological dictionaries, Treccani). The resulting dictionary was evaluated on a diverse corpus—including fiction, film dialogue, social media posts, journalistic writing, and academic texts—assessing both lexical coverage and category distribution.

Results

Preliminary analyses indicate strong coverage across different linguistic registers and a robust capacity to distinguish between formal and informal styles, aligned with the hierarchical category structure.

Conclusions

The Italian LIWC-22 adaptation exhibits promising psychometric properties, including solid internal consistency and contextual sensitivity across varied genres. These results support its utility for psychological and linguistic research in Italian. Future directions include further refinement and broader validation across research domains.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Memory / 594

Utilizzare un braccialetto per il monitoraggio della frequenza cardiaca durante una visita museale migliora memoria ed emozioni dei visitatori: Uno studio presso il Museo di arte moderna e contemporanea (MART) di Rovereto

Author: Nicola Vasta¹

Co-authors: Margherita Andrao¹; Barbara Treccani¹; Claudio Mulatti¹

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Negli ultimi anni, alcuni curatori museali hanno iniziato a integrare dispositivi in grado di misurare le risposte fisiologiche dei visitatori durante le esposizioni museali. Questi dispositivi consentono, da un lato, di monitorare i cambiamenti fisiologici nel corso della visita e, dall'altro, rappresentano un mezzo per coinvolgere maggiormente il pubblico. Nonostante queste premesse, non è ancora chiaro se tali dispositivi promuovano effettivamente un'esperienza positiva o se, al contrario, vengano percepiti dai visitatori come strumenti invasivi. Inoltre, resta ancora da comprendere in che modo il feedback fornito da questi strumenti influenzi i processi cognitivi dei visitatori. In questo progetto, sulla base di teorie tradizionali che collegano risposte fisiologiche, emozioni e memoria, è stato testato se l'uso di un braccialetto per il monitoraggio della frequenza cardiaca durante una mostra

temporanea presso il Mart di Rovereto potesse influenzare le emozioni dei visitatori, e se tali cambiamenti emotivi potessero, a loro volta, incidere sulla memoria a lungo termine delle opere esposte. I risultati di questo esperimento mostrano che l'uso di questo dispositivo ha aumentato le emozioni positive dei visitatori e migliorato la loro memoria della mostra. Questi effetti si sono mantenuti anche a sei giorni di distanza dalla visita. Inoltre, è stato osservato che fornire un feedback inventato riguardante le emozioni provate in una specifica sala aumentava la memoria dei visitatori per le opere presenti in quella sala. Questi risultati incoraggiano l'impiego di tecnologie indossabili nelle esposizioni museali e supportano l'ipotesi che queste possano migliorare l'esperienza del visitatore, indipendentemente dall'accuratezza del feedback fornito.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Emotions and motivation 1 / 598

REM sleep fragmentation effect on emotional memory and reactivity: an experimental study on healthy subjects.

Author: Lorenzo Viselli¹

Co-authors: Aurora D'Atri¹; Benedetto Arnone¹; Costanza Colombo²; Daniela Tempesta¹; Domenico Corigliano¹; Fabiana Festucci¹; Federica Naccarato¹; Federico Salfi¹; Giulia Amicucci¹; Michele Ferrara¹; Nicola Cellini²

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Recent evidence in sleep disorders shows that REM sleep fragmentation (frequent cortical arousals and sleep stage transitions disrupting REM sleep continuity) interferes with overnight amygdala adaptation to emotional events, possibly explaining the excessive emotional reactivity reported in these patients. However, sleep in clinical populations features multiple sleep alterations besides REM sleep fragmentation that could contribute to the diurnal dysregulation of affective responses. To disentangle the effect of REM sleep fragmentation from other confounding, we induced REM sleep fragmentation in good sleepers via vibrotactile stimulation, evaluating its effects on overnight emotional processing.

Seventeen healthy participants (23.18±3.94y) underwent two experimental conditions (Fragmentation/Control, counterbalanced) encompassing: stimuli encoding and baseline emotional memory/reactivity assessment (eMR-test; T0); nocturnal polysomnography; post-sleep eMR-test (T1); follow-up eMR-test 48hrs later (T2). REM-sleep continuity was disrupted during the Fragmentation night by inducing cortical arousals via wrist vibrotactile stimulation. The eMR-tests consist of self-report evaluation (self-assessing manikin), physiological responses (Skin Conductance Response, SCR; Heart Rate Deceleration, HRD), and behavioural memory (Old/New paradigm) for negative/neutral stimuli. During the Fragmentation night, REM duration decreased ($p<0.001$), while NREM1 duration and REM sleep fragmentation index increased (all $p>0.001$), without altering other sleep parameters (all $p>0.170$). Analyses highlighted the effects of REM sleep fragmentation on HRD measures only (all $p\leq 0.002$). HRD values decreased at T1 in the Control condition ($p=0.007$), stabilising at T2 ($p>0.999$), while no changes occurred over sessions in the Fragmentation condition (all $p>0.529$).

REM sleep fragmentation disrupts psychophysiological habituation processes, altering parasympathetic (HRD) reactions to emotional stimuli without affecting their subjective evaluation and consolidation.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Social Cognition / 571**Un effetto SNARC-like per il peso corporeo****Author:** Mario Dalmaso¹**Co-authors:** Anna Lorenzoni ; Loris Brunello ; Michele Vicovaro¹ *Università di Padova***Corresponding Author:** mario.dalmaso@unipd.it

Come viene rappresentato mentalmente il peso corporeo? Questo studio ha indagato se la percezione di questa variabile sociale sia organizzata spazialmente in modo analogo all'effetto SNARC osservato nella cognizione numerica (ossia, quantità piccole associate alla parte sinistra dello spazio e quantità grandi a destra). A partecipanti (normopeso) sono state presentate delle immagini di stimoli corporei che apparivano, singolarmente, al centro dello schermo. Il compito consisteva nel giudicare se tali stimoli rappresentassero un corpo con un peso più leggero o più pesante rispetto a un corpo di riferimento osservato all'inizio del compito. Le risposte, manuali, venivano fornite tramite due tasti lateralizzati (uno posizionato a sinistra e uno a destra). I risultati hanno rivelato un effetto simil-SNARC: i corpi più leggeri sono stati classificati più rapidamente con il tasto sinistro, mentre quelli più pesanti con il tasto destro. Questi risultati suggeriscono che la percezione visiva della corporatura non coinvolge solo una dimensione valutativa, ma è anche spazialmente radicata.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Attention / Language / 639****Il ruolo dell'euristica dell'affetto nel modellare le percezioni dell'IA in medicina****Author:** Margherita Daho¹**Co-author:** Dario Monzani¹¹ *Università di Palermo***Corresponding Author:** margherita.daho@unipa.it

Background: L'euristica dell'affetto, come proposto da Finucane et al. (2000), descrive come le emozioni influenzino giudizi e decisioni, portando le persone a inferire rischi e benefici sulla base di affetti positivi o negativi. Nel contesto medico, l'intelligenza artificiale (IA) sta assumendo un ruolo crescente nella diagnosi e gestione dei pazienti. Comprendere come le percezioni affettive plasmano l'accettazione dell'IA è essenziale per favorire una corretta implementazione. Questo studio ha esaminato come la comunicazione di alti o bassi rischi e benefici relativi all'uso dell'IA influenzi la valutazione affettiva e le inferenze sui rischi e benefici.

Metodo: Sono stati reclutati 200 adulti, assegnati casualmente a quattro condizioni sperimentali (alto beneficio, basso beneficio, alto rischio, basso rischio). I partecipanti hanno completato misure di rischio percepito, beneficio percepito e reazione affettiva prima (T0) e dopo (T1) l'esposizione alle informazioni. Sono state condotte ANOVA a misure miste 2x4 per analizzare gli effetti del tempo e della condizione sperimentale.

Risultati: Il rischio percepito è aumentato significativamente solo nella condizione di alto rischio, mentre è diminuito nelle condizioni di alto beneficio e basso rischio. Il beneficio percepito è aumentato nella condizione di alto beneficio e diminuito in quella di alto rischio. La reazione affettiva ha mostrato un calo marcato nella condizione di alto rischio, senza variazioni rilevanti nelle altre condizioni.

Conclusione: I risultati confermano che l'euristica dell'affetto influenza le percezioni dell'IA in

medicina. Le informazioni sui rischi e benefici modulano in modo prevedibile le valutazioni affettive, suggerendo implicazioni strategiche per la comunicazione e promozione dell'adozione delle tecnologie basate sull'IA.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Methodology 1 / 569

La stima dell'accordo tra valutatori: il problema delle grandi differenze tra le soglie di classificazione

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Co-authors: Michele Vicovaro ¹; Umberto Granziol ²; Giovanni Bruno ³; Anna Panzeri ⁴; Giuseppe Mignemi ⁵; Andrea Spoto ⁶

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La stima dell'accordo tra valutatori su compiti di classificazione booleana si basa sul conteggio delle concordanze osservate, eventualmente aggiustato per la probabilità di accordo dovuto al caso. Una classificazione booleana, a sua volta, può essere considerata come il risultato di un modello a due costrutti. Il primo è la teoria del valutatore, ossia la soggettiva valutazione sul grado di appartenenza degli oggetti alle varie categorie, il secondo è una soglia, fissa e unica per ogni valutatore: quando il grado di appartenenza supera la soglia, l'oggetto viene classificato come appartenente alla data categoria. In alcune circostanze le soglie dei valutatori hanno un forte impatto nella stima del loro accordo e possono portare a distorsioni anche notevoli.

Per limitare questo problema abbiamo ideato due modelli Bayesiani, uno di stima della soglia dei valutatori e l'altro della loro teoria. Sulla base di queste stime è possibile parificare le soglie e correggere le eventuali distorsioni. Attraverso uno studio di simulazione Monte Carlo abbiamo poi posto a confronto la precisione degli indici tradizionali rispetto a quelli corretti. Tra i fattori manipolati vi sono il numero di valutatori - 3 o 6 - e la disponibilità di una *prior* informativa.

I risultati confermano che gli indici corretti superano i loro corrispettivi tradizionali. Tale miglioramento è direttamente proporzionale alle differenze tra le soglie dei valutatori. Saranno discusse infine le possibili applicazioni, le prospettive di sviluppo e, più in generale, la riproducibilità e la validità delle misure e della ricerca.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Social Cognition / 574

Meccanismi psicologici della discriminazione di genere: uno studio qualitativo comparativo tra Italia e Lituania

Author: Giulia Lausi¹

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La discriminazione di genere rappresenta una forma pervasiva di disuguaglianza che si manifesta in diversi contesti sociali, influenzando credenze, emozioni e comportamenti. Il presente studio esplora le esperienze di discriminazione di genere, adottando il modello socio-ecologico di Bronfenbrenner come cornice teorica, con l'obiettivo di comprendere l'impatto che il microsistema e il mesosistema possono avere sul riconoscimento, accettazione e rifiuto della discriminazione di genere.

La ricerca ha utilizzato un approccio qualitativo con finalità esplorativo-sperimentali, volto a generare ipotesi teoriche da testare in successivi studi quantitativi. Sono state condotte interviste semi-strutturate online con partecipanti adulti italiani e lituani, includendo anche individui che vivono in un contesto culturale diverso da quello d'origine (italiani in Lituania e lituani in Italia), al fine di esplorare le percezioni cross-culturali della discriminazione di genere. Le interviste, della durata media di circa 30 minuti, sono state svolte in italiano o inglese, secondo le preferenze.

L'analisi tematica ha permesso l'identificazione di pattern ricorrenti relativi alle esperienze vissute in ambito familiare, scolastico/lavorativo e nelle relazioni sociali. È stato adottato un approccio comparativo per rilevare similitudini e differenze tra i due contesti culturali.

I risultati contribuiscono alla costruzione di un modello preliminare utile per progettare futuri studi sperimentali, con l'obiettivo di indagare le componenti cognitive ed emotive implicate nei processi di normalizzazione della discriminazione e nella regolazione delle risposte individuali.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Attention / Language / 927

Uno studio elettrofisiologico sul legame tra apprezzamento estetico per gli stimoli musicali e la modulazione dell'apprendimento implicito in pazienti post-stroke

Author: Greta Varesio^{None}

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Introduzione

La letteratura in ambito neuroestetico suggerisce che gli stimoli uditivi (Sarasso et al., 2022) e visivi (Sarasso et al., 2020) più apprezzati esteticamente sono elaborati in maniera più efficace, potenziando l'attenzione di chi li percepisce.

Nel presente studio abbiamo indagato come l'apprezzamento estetico di stimoli musicali influenzi i correlati elettrofisiologici dell'apprendimento implicito in pazienti post-stroke.

Metodo

È stata registrata l'attività cerebrale tramite elettroencefalogramma durante l'ascolto musicale e durante un compito di apprendimento implicito (Mismatch Negativity - MMN - task) in pazienti post-stroke (almeno 30 giorni dopo l'evento acuto).

L'esperimento prevedeva l'ascolto di quattro brani musicali, ai quali i pazienti attribuivano un giudizio

estetico, on a 9-point Likert scale. È stata poi confrontata la risposta di MMN, un indice neurale di apprendimento implicito, in relazione ai brani più e meno apprezzati.

Risultati

I risultati preliminari sono in linea a quanto osservato in precedenza in partecipanti sani (Sarasso et al., 2022), mostrando un'amplificazione della risposta di apprendimento implicito in seguito all'ascolto dei brani maggiormente apprezzati. In particolare, la differenza dell'amplificazione della risposta è stata registrata negli elettrodi centrali, nell'intervallo temporale tra 100 e 250 ms, finestra entro cui si colloca il picco della MMN (Molholm et al., 2005).

Discussione

Il risultato attesta che la preferenza estetica, al netto della tipologia dello stimolo presentato, può amplificare la risposta neurale agli stimoli ambientali, migliorando significativamente i meccanismi di apprendimento implicito. Lo studio suggerisce che la gratificazione estetica può migliorare l'efficacia dei protocolli di riabilitazione neurocognitiva.

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No

Emotions and motivation 1 / 643

Empatia senz'anima: alessitimia e “paradosso emotivo” della personalità psicopatica

Authors: Danilo Mitaritonna¹; Tiziana Lanciano²; Antonietta Curci²

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Elevati tratti psicopatici sono associati a pattern disfunzionali di regolazione emotiva, compromissione empatica e deficit nel riconoscimento delle emozioni, riconducibili all'alessitimia. Evidenze recenti indicano che individui con marcati tratti psicopatici conservano intatta la capacità di assunzione di prospettiva (Perspective Taking, PT), componente cognitiva dell'empatia. Al contempo, la dimensione cognitiva dell'alessitimia (External-Oriented Thinking, EOT) risulta associata sia a tratti psicopatici che a tratti empatici, configurandosi come un potenziale mediatore tra i due domini. Inoltre, tratti psicopatici più pronunciati rappresentano un potenziale fattore di rischio per il benessere psicosociale di giovani adulti, con conseguente sviluppo di condotte aggressive, dinamiche relazionali disfunzionali e comportamenti manipolativi. Il presente studio indaga il ruolo delle differenze individuali a livello di deficit alessitimico, nel mediare la relazione tra tratti psicopatici ed empatia cognitiva (PT). Su un campione di 383 studenti universitari sono state raccolte misure di psicopatia (Psychopathic Personality Inventory-Revised), alessitimia (Toronto Alexithymia Scale-20) ed empatia di tratto (Interpersonal Reactivity Index). In particolare, sono stati testati modelli di regressione i cui risultati dimostrano il ruolo di mediazione della componente alessitimica EOT nella relazione tra tratti psicopatici—in particolare, le caratteristiche antisociali e di deficit emotivo—e PT. Sono emersi effetti diretti e indiretti significativi, a indicare che l'EOT media parzialmente il legame tra i tratti psicopatici e la tendenza ad assumere la prospettiva altrui.

I risultati supportano l'importanza della valutazione delle differenze individuali nella regolazione emotiva da parte di popolazioni di giovani adulti a rischio di condotte antisociali, anche finalizzate alla prevenzione di eventuali recidive di comportamenti problematici.

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Memory / 601**Il ruolo delle informazioni semantiche nella codifica spaziale egocentrica ed allocentrica durante l'invecchiamento****Author:** Michela Possenti¹**Co-authors:** Renato Orti¹; Tina Iachini¹; Gennaro Ruggiero¹; Francesco Ruotolo¹ *Università degli Studi della Campania "Luigi Vanvitelli"***Corresponding Author:** michela.possenti@unicampania.it

Durante l'invecchiamento, la memoria spaziale, fondamentale per compiti quotidiani come ricordare dove si trovano le chiavi, subisce un declino. Questo tipo di memoria si basa sulla capacità di rappresentare la posizione degli oggetti attraverso sistemi di riferimento egocentrico (centrato sul corpo) e allocentrico (centrato sull'ambiente). La letteratura ha evidenziato come queste abilità diminuiscano con l'età, ma spesso ha impiegato stimoli astratti e decontestualizzati, trascurando l'influenza della componente semantica degli oggetti in ambienti realistici. Secondo alcuni modelli teorici, la memoria semantica e la codifica allocentrica condividerebbero meccanismi neurali comuni, in particolare a livello dell'ippocampo (es. Buzsáki & Moser, 2003). Poiché la memoria semantica tende a rimanere relativamente intatta nell'anziano, ci siamo proposti di indagare il suo potenziale ruolo nella memoria spaziale.

A tal fine, 33 giovani e 33 anziani sono stati immersi in ambienti semanticamente ricchi (es. una cucina) e astratti (es. una stanza vuota), dove hanno memorizzato triadi di oggetti congruenti con il contesto. Successivamente, hanno effettuato giudizi spaziali di tipo egocentrico (oggetto più vicino a sé) o allocentrico (oggetto più vicino a un altro della triade).

I risultati mostrano che gli anziani sono generalmente meno accurati dei giovani. Tuttavia, mentre in ambienti astratti i giudizi egocentrici risultano più precisi, in quelli quotidiani l'accuratezza allocentrica aumenta significativamente, sia nei giovani che negli anziani.

Questi dati suggeriscono che la memoria semantica possa supportare selettivamente la codifica allocentrica anche in età avanzata, offrendo un potenziale meccanismo compensatorio per il declino della memoria spaziale legata all'invecchiamento.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Methodology 1 / 570****New Insights into Active Aging: Analyzing UJACAS with the COM-B Framework to Understand Opportunity and Capability's Impact****Authors:** Rosa Napoletano¹; Antonella Lopez²; Elisabetta Ricciardi³; Sergio Traficante¹; Luigi Tinella⁴; Alessandro Oronzo Caffò¹; Giuseppina Spano⁵; Manuela Nicoletta Di Masi⁶; Andrea Bosco¹¹ *Department of Educational Sciences, Psychology, Communication, University of Bari*² *Department of Humanities, Education and Sciences, University of Molise*³ *Department of Precision and Regenerative Medicine and Ionian Area, University of Bari*⁴ *Department of Humanities, Philosophy and Education, University of Salerno*⁵ *Department of Psychology and Education, Pegaso Telematic University*⁶ *IBiSS Società Cooperativa Sociale, Rutigliano, Italy***Corresponding Author:** rosa.napoletano@uniba.it

Background: Active Ageing (AA) refers to the process of optimizing opportunities for health, participation, and security in later life. The University of Jyväskylä Active Ageing Scale (UJACAS) is

one of the few instruments that operationalizes AA across four dimensions: motivation (will to act), ability, opportunity to act, and activity frequency. However, questions remain regarding the conceptual role and measurement function of the “ability” and “opportunity” subscales.

Methods: This study examined the structure and interpretation of the UJACAS through two investigations. Study I proposed and evaluated an Italian translation of the scale and tested whether a change in the order of subscale administration influenced responses. Study II used a theory-driven canonical correlation modeling approach (COM-B-aligned) to assess the relationship between the UJACAS subscales “ability to act” and “opportunity to act” and external measures of disability (WHO-DAS 2.0) and environmental barriers (TESLA).

Results: The order of subscale administration had no significant impact on response patterns. However, strong multivariate associations emerged between the “ability” and “opportunity” subscales and external indicators of physical and environmental limitations. These findings suggest that these subscales function more as behavioral prerequisites than as intrinsic components of active ageing.

Conclusions: Findings support a conceptual refinement of the UJACAS, proposing that “ability” and “opportunity to act” be treated as contextual moderators of activity frequency rather than elements of the AA construct itself. This redefinition has implications for both measurement accuracy and implementation strategies targeting active ageing.

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Memory / 656

Interindividual memory differences are linked to corticothalamic networks during memory encoding and retrieval

Author: Antonella Lupo^{None}

Co-authors: Roberta Passiatore ; Nicola Sambuco ¹; Linda A. Antonucci ; Giuseppe Stolfa ; Alessandro Bertolino ; Teresa Popolizio ; Boris Suchan ; Giulio Pergola

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Encoding new memories relies on functional connections between the medial temporal lobe and the frontoparietal cortices. Multi-scan fMRI revealed changes in these functional connections before and after memory encoding, potentially modulated by the thalamus. As different thalamic nuclei are interconnected with distinct cortical networks, we hypothesized that variations in cortico-thalamic recruitment may support individual memory performance.

We performed a multi-scan fMRI protocol in two independent samples of healthy adults (N1=29, mean age=26; N2=108, mean age=28), including a baseline resting-state scan preceding an associative memory task with encoding and retrieval phases. To minimize registration bias, individual activity and functional connectivity (FC) were analyzed in the native space. Thalamic nuclei were segmented on the individual T1 and grouped into four subdivisions (anterior, medial, ventral, posterior).

By employing a Structural Equation Modeling framework to explore the interplay between baseline FC, task-related activity, and memory performance, we found a positive association between resting-state FC of the medial thalamic subdivision within the frontoparietal network and memory performance across samples (p-values between 0.01 and 4×10^{-5}). This direct relationship was mediated by decreased activation of the anterior subdivision during encoding (p-values between 0.05 and 0.006) and by increased activation of the medial subdivision during retrieval (p-values between 0.05 and 0.004). Additionally, we identified three distinct clusters of individuals displaying different corticothalamic patterns across memory phases.

Rather than relying on the conventional approach of averaging across individuals, this study emphasizes that the cortico-thalamic functioning involving the anterior and medial thalamus underlies interindividual variability in associative memory encoding.

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Attention / Language / 711

Integrazione e segregazione multisensoriale: segnali percettivi emergenti nei bambini in età pre-scolare

Authors: Gloria Calafatello¹; Silvia Zanchi^{None}; Nicolò Balzarotti¹; Andrew J Bremner²; Monica Gori^{None}

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Al fine di indagare lo sviluppo dell'abilità di integrazione e segregazione multisensoriale, abbiamo somministrato un compito di percezione spaziale a 23 bambini di 3–5 anni. Utilizzando un device con due carrelli mobili dotati di smartphone, venivano presentati stimoli visivi (V), uditivi (A) o audiovisivi (AV), mentre i carrelli si allontanavano orizzontalmente. Due video sincronizzati registravano lo sguardo del bambino; spostare lo sguardo da uno stimolo all'altro veniva considerato indice di segregazione, e un codice Python calcolava la distanza tra i carrelli in quell'istante. Il test di Friedman sulle medie e sulle deviazioni standard non ha mostrato effetti significativi ($p > .4$ media; $p > .5$ deviazione standard), né è emerso un vantaggio della condizione AV rispetto al Best Cue. Calcolando i pesi sensoriali secondo il modello di Maximum Likelihood Estimation (MLE), abbiamo individuato un sottogruppo di bambini con pesi visivi e uditivi simili, indicativi di integrazione equilibrata. In questi, pur senza significatività ai test di Friedman ($p > 0.1$ media, $p > 0.5$ deviazione standard), gli effect size suggeriscono un effetto moderato (A vs. AV, V vs. AV), con una tendenza a percepire la segregazione in AV a distanze inferiori rispetto agli stimoli unimodali. Inoltre, la varianza in AV risulta numericamente inferiore rispetto al Best Cue, seppur non significativa. I risultati suggeriscono un'alta variabilità interindividuale, con segnali di integrazione emergente in alcuni bambini, coerentemente con l'ipotesi che il consolidamento multisensoriale avvenga verso i 7–8 anni. Comprendere queste traiettorie è cruciale per chiarire come si sviluppi la percezione multisensoriale.

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No

Emotions and motivation 1 / 509

Psicologia Positiva e Social Network Sites: Una review sistematica

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Gli utenti dei Social Network Sites (SNS) sono costantemente esposti a contenuti che enfatizzano la prospettiva delle 'Good vibes only' e partecipano attivamente a interazioni che promuovono un modello ideale di esistenza umana. Tale visione poggia sulla più generale Teoria della Psicologia Positiva, privando l'esperienza individuale di ogni forma di imperfezione, fragilità o emotività negativa. Obiettivo della presente review sistematica è analizzare l'applicazione dei presupposti della Teoria della Psicologia Positiva nei SNS, al fine di comprendere come questa prospettiva ottimistica

della vita sia veicolata attraverso tali piattaforme e quali gli effetti diretti e indiretti sugli utenti. A febbraio 2025, sono stati consultati diversi database (Scopus, Psychology & Behavioral Sciences Collection, Web of Science, APA Psycinfo e PUBMED) seguendo le linee guida del PRISMA Statement. Sono stati inclusi articoli in lingua inglese e studi che analizzano interazioni specifiche sui SNS; sono stati invece esclusi studi di area non psicologica (es. economiche, sociologiche etc.) e studi condotti su campioni in età evolutiva. In linea con la complessità del fenomeno indagato, gli studi selezionati forniscono risultati eterogenei: l'esposizione a messaggi di gratitudine sui SNS sembra aumentare il benessere soggettivo, mentre tratti di personalità come il nevroticismo e la bassa coscienza sociale risultano associati ad un uso problematico dei SNS, mediato da nuove forme di ansia sociale come la 'Fear of Missing Out'. L'analisi dei contenuti rivela che le influencers rappresentano i problemi di salute mentale in termini di fiducia e amor proprio, relegandone la gestione ad esclusiva responsabilità del singolo, transcendendo talvolta la rassegnazione.

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Social Cognition / 626

Integrazione mentale alterata e disregolazione delle emozioni come possibili effetti a lungo termine di esperienze genitoriali disfunzionali: uno studio EEG di connettività funzionale prima e dopo l'attivazione del sistema di attaccamento

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Le esperienze genitoriali disfunzionali costituiscono un fattore di vulnerabilità per lo sviluppo di condizioni psicopatologiche nel corso della vita. Sebbene numerosi studi abbiano evidenziato alterazioni neuro-funzionali associate a tale fenomeno, le basi neurali coinvolte restano ancora poco approfondite. Tramite l'uso dell'elettroencefalografia (EEG), il presente studio ha esplorato le modificazioni della connettività funzionale nel Salience Network prima e dopo l'esposizione a stimoli attivanti il sistema di attaccamento, confrontando persone con alti e bassi livelli percepiti di genitorialità disfunzionale. Un campione di 82 partecipanti ha compilato una batteria di questionari relativi a variabili sociodemografiche, esperienze di genitorialità disfunzionale e di strategie di regolazione emotiva. Successivamente, sono state effettuate due registrazioni EEG a riposo, prima e dopo la somministrazione dell'Adult Attachment Projective Picture System (AAP). Dopo l'esposizione agli stimoli dell'AAP, nelle persone con elevati livelli di genitorialità disfunzionale percepita, è emerso un incremento della connettività alfa tra il giro sopramarginale sinistro e la corteccia cingolata anteriore. Una successiva analisi di connettività intra-banda, basata sulla suddivisione della banda alfa in tre sottocomponenti (bassa, media e alta), ha rivelato che l'incremento era specifico per la componente media (9.5–11.5 Hz). Inoltre, soltanto nella condizione post-AAP è stata osservata una correlazione positiva tra l'indice di connettività dell'alfa media e la disregolazione emotiva. Sulla base dei presenti risultati, è possibile ipotizzare che persone con una storia di genitorialità disfunzionale possano sviluppare alterazioni neurofisiologiche specifiche, indicative di una deficitaria integrazione mentale e di una disregolazione emotiva quando esposti a stimoli emotivamente salienti associati al sistema di attaccamento.

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No

Methodology 1 / 624

Evaluating Item Quality from a Person-Centered Perspective: Leveraging Latent Class Analysis for Item Selection

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Constructs are often measured using multi-item scales and item quality evaluation depends on the theoretical framework adopted. For instance, within Classical Test Theory, items are typically evaluated based on their factor loadings, whereas Item Response Theory emphasizes item difficulty and discrimination. This contribution introduces an alternative, person-centered approach to item evaluation and selection. According to this framework, the population is assumed to consist of latent subgroups of individuals who are similar to one another and distinct from those in other subgroups (Howard & Hoffman, 2018). Consequently, a good item is one that helps classify individuals into the correct latent class.

We illustrate this approach using the 22-item Schizotypal Personality Questionnaire-Brief (SPQ-B; Raine & Benishay, 1995), administered to a non-clinical sample of 496 participants. The three-factor structure (cognitive-perceptual, interpersonal, disorganized) was confirmed [$\chi^2(206) = 543.109$, $p < .001$; RMSEA = .057 (.052–.063), $p = .019$; CFI = .907; SRMR = 0.088]. A Latent Class Analysis identified four distinct subgroups: a normotypical profile ($n = 147$), a globally schizotypal profile at higher clinical risk ($n = 92$), an interpersonally impaired profile ($n = 96$), and a profile with cognitive-perceptual tendencies ($n = 161$).

Item quality was then assessed using multiple procedures, including class separation (Masyn, 2013), the Kullback-Leibler divergence method (van Buuren & Eggen, 2017), and the proportion of misclassified cases (Bartolucci et al., 2016). Results will be discussed within the person-centered framework, highlighting the added value of this approach for item evaluation and its potential for future applications.

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Emotions and motivation 1 / 745

Individual Reward Styles Predict Brain and Behavioral Responses to Dopaminergic Challenges

Author: Nicola Sambuco¹

Co-authors: Antonella Lupo¹; Roberta Passiatore¹; Peter C.T. Hawkins²; Pierluigi Selvaggi¹; Linda A. Antonucci¹; Alessandro Bertolino¹; Giuseppe Blasi¹; Daniela Grasso³; Alessandra Raio¹; Antonio Rampino¹; Mitul A. Mehta²; Giulio Pergola⁴

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Background. Reward processing plays a central role in mental health and psychopathology. The Sign-Tracker/Goal-Tracker (ST/GT) framework, adapted from animal research, captures individual differences in how motivational salience is assigned either to reward-predictive cues (ST) or to the rewards themselves (GT). Here, we examined whether these profiles in humans are sensitive to changes in dopamine signaling, using fMRI and a pharmacological manipulation.

Methods. Thirty-four healthy participants (all male, mean age = 26.9) performed a Monetary Incentive Delay task under placebo and after administration of low doses of risperidone (0.5mg, 2mg) or haloperidol (3mg), in a cross-over design. Participants were categorized as ST or GT based on patterns of brain activation in key reward-related regions.

Results. Under placebo, ST showed stronger neural responses during reward anticipation, whereas GT responded more during reward outcomes. After dopamine receptor antagonism, ST displayed significant reductions in anticipatory brain responses ($p = 0.005$) in a dose-dependent manner ($p = 0.009$). GT showed no significant changes. Moreover, ST reported greater declines in subjective energy under drug conditions compared to GT ($p < 0.001$).

Conclusions. These findings suggest that individual differences in salience attribution predict how reward-related brain activity responds to dopaminergic modulation. fMRI-based ST/GT profiling may offer new insights into motivational processes and inform personalized approaches to psychological and psychiatric interventions targeting reward system dysfunction.

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No

Memory / 735

Il ruolo della self-deception nel ricordo di eventi autobiografici

Author: Federico Puleo¹

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L'autoinganno (self-deception) è un atto di natura psicologica che può portare le persone a convincersi di falsità circa sé stessi. Le ragioni per cui le persone ricorrono all'autoinganno possono essere molteplici, ad esempio per mantenere una immagine positiva di sé o per rendere più facile ingannare gli altri. Mentire a sé stessi può alterare i ricordi autobiografici, promuovendo il recupero e il mantenimento di dettagli positivi, a discapito di quelli giudicati negativi per il proprio senso di identità. Il presente studio intende indagare il ruolo della self-deception nel ricordo di eventi significativi per la propria identità (self-defining memories). A 128 partecipanti è stato chiesto di ricordare due eventi autobiografici significativi, uno con valenza positiva e l'altro negativa. Successivamente è stato chiesto di valutare quanto credevano che l'evento fosse realmente accaduto e quanto accurato ne è il ricordo. I partecipanti hanno, inoltre, fornito una valutazione di alcune caratteristiche degli eventi riportati (sensazione di rivivere l'evento, valenza ed intensità emotiva). Infine, hanno compilato il Self-Deception Questionnaire per avere una misura della disposizione individuale alla self-deception. I risultati preliminari indicano che all'aumentare della disposizione alla self-deception diminuisce significativamente l'accuratezza percepita dei ricordi con valenza negativa. I risultati

hanno implicazioni cliniche e forensi. In particolare, per l'ambito forense, i risultati apportano informazioni utili ai professionisti psicologi che sono chiamati a supportare il giudice nella valutazione della credibilità di un testimone o dell'accuratezza di una testimonianza.

If you're submitting a symposium talk, what's the symposium title?:

Differenze Individuali e Memoria Episodica ed Autobiografica: Nuove Prospettive Empiriche e Teoriche

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No

Attention / Language / 875

La corteccia premotoria dorsale (dPMC) orchestra l'immaginazione del ritmo musicale: uno studio di stimolazione magnetica transcranica (TMS)

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La generazione endogena del ritmo musicale è stata teorizzata come dipendente da regioni motorie e premotorie. Mentre modelli recenti evidenziano il ruolo del sistema motorio nella generazione di previsioni interne dell'azione durante la percezione e l'immaginazione del beat, il coinvolgimento causale di questo sistema resta poco chiaro. Un precedente studio nel nostro laboratorio ha dimostrato un ruolo causale della corteccia premotoria dorsale destra (dPMC) nella percezione del ritmo, quando il beat è presente nel suono. Tuttavia, non è chiaro se le stesse aree siano coinvolte anche nell'immaginazione del beat. Dunque, abbiamo utilizzato la stimolazione magnetica transcranica (TMS) per esaminare il contributo causale di dPMC e SMA durante l'immaginazione del beat. 42 non musicisti ascoltavano brani musicali e dovevano identificare se il timing di un tono finale (probe), presentato dopo una breve pausa, fosse coerente con il ritmo della musica precedente. Tre impulsi di TMS a 10 Hz sono stati applicati prima della fase di immaginazione del ritmo su dPMC, SMA e una condizione sham di controllo. Inoltre, i partecipanti dovevano compilare un questionario (BAIS) che testava la loro capacità di immaginare suoni. I risultati mostrano che la stimolazione di dPMC modula le capacità di immaginazione del beat. Inoltre, questo effetto interagisce con i risultati del questionario, con un effetto più marcato nei partecipanti con bassa immaginazione uditiva. Questi risultati supportano il ruolo della corteccia premotoria nella generazione e nell'elaborazione endogena del beat e suggeriscono che l'effetto della TMS sia modulato dallo stato funzionale individuale di dPMC al momento della stimolazione.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Social Cognition / 548

Does culture matter? The role of individuals' cultural profile in anthropomorphizing robots.

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In the Human-Robot Interaction (HRI) field, individual differences play a fundamental role in shaping people's attitudes towards robots. Among individual differences, culture is one of the most deeply ingrained in individuals through their development and upbringing, leading to the use of such cultural values as biases and heuristics in daily interactions with others. Given the crucial role of culture, in the present study, we sought to examine whether, and to what extent, individuals' cultural profile modulates their tendency to anthropomorphize robots, i.e., the likelihood of attributing anthropomorphic traits to them. Therefore, we recruited a sample of middle school students (aged 11-14) to perform a set of questionnaires about their cultural values. Then, we adapted two well-established paradigms to measure their implicit attitudes towards robots: (1) the Implicit Association Test (IAT), which allows detecting the strength of association between concepts and attributes (in our case, between the concept of "robot" and the attribute of "anthropomorphic") and (2) the Cyberball ball-tossing game, which allows to gain information about the perception of the other players (in our case, a human confederate and an embodied humanoid robot) as a partner. Results showed that culture, operationalized as participants' responses to questionnaires, significantly modulated their tendency to anthropomorphize robots, yet differently according to the kind of task (IAT vs. Cyberball). Interestingly, only some cultural values significantly affected participants' anthropomorphism towards robots, thus indicating that culture is a multi-faceted concept that has to be deeply investigated to fully understand how it shapes people's attitudes towards robots.

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No

Methodology 1 / 535

A validation study for the brief form of the HEXACO Medium School Inventory Extended (MSI-E)

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The emergence of the HEXACO model in personality studies and the lack of an adequate scale for the measurement of personality in adolescence according to this model have prompted some researchers to develop and validate a novel HEXACO scale for adolescents (10-14 years), named HEXACO Medium School Inventory Extended (MSI-E). The scale consists of 192 items and showed excellent psychometric properties. However, sometimes, due to time constraints, this version of the scale might be impractical for its length. Based on this consideration, this work aimed at developing a brief form of the HEXACO-MSI-E consisting of 60 items, named HEXACO-MSI-60. In Phase 1,

starting from the 192-item version of the HEXACO-MSI-E (i.e., 32 items for each factor) validated on a sample of 1182 adolescents (Mage=12.04, SD=0.92), using Principal Component Analysis (PCA), we identified the best 10 items for each factor, and we verified the psychometric properties of the scale. In Phase 2, to get confirmation about the structure of the 60-item version of HEXACO-MSI-E, PCAs, Explorative Factor Analyses (EFAs) and Confirmatory Factor Analysis (CFA) were carried out on data collected on a second sample of 452 adolescents (Mage=12.17, SD=0.91). The results have shown that the HEXACO-MSI-60 has a clear six-factor structure and is reliable. Future studies should investigate other psychometric properties of this scale. Having a brief form of HEXACO-MSI-E is very useful in any research context in which time constraints permit only a short inventory to be administered.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Memory / 843

Enhancing Memory: The Role of 40 Hz Stimulation during Consolidation

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While 40 Hz sensory and electric stimulation is being investigated as a cognitive enhancer in Alzheimer's Disease (AD), research has shown that transcranial stimulation at 60 and 90 Hz can enhance memory in healthy individuals, emphasizing the importance of frequency congruence between encoding and retrieval phases. This aligns with theories on levels of processing and the role of gamma oscillations in organization and long-term memory formation. However, no studies have examined whether stimulation during the consolidation phase, critical for involuntary memory stabilization, could provide additional benefits.

This study examines the effects of 40 Hz auditory and transcranial alternating current stimulation on cross-modal associative memory using the Italian Face-Name Association Test (itFNAT). Forty healthy adults, assigned counterbalanced to auditory or electrical stimulation groups, completed the itFNAT under three conditions: (1) continuous stimulation across encoding, consolidation, and retrieval; (2) intermittent stimulation during encoding and retrieval only; and (3) sham stimulation. Immediate recall (IR) was assessed during encoding, while delayed recall (DR), encompassing free recall and recognition, was measured during retrieval. A non-interfering distractor task was performed during consolidation.

Preliminary analysis suggests that 40Hz improves memory performance compared to sham stimulation. Specifically, continuous stimulation enhances DR, more than the intermittent condition, supporting that gamma stimulation can improve associative memory in healthy adults. This highlights the role of gamma activity during memory consolidation, a phase in which the brain stabilizes information without active cognitive effort. Further research is needed to investigate the underlying neural mechanisms and explore potential translational applications.

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Social Cognition / 634

A prima vista (e oltre). Un'indagine sperimentale sulla formazione di impressioni nel dating online

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Introduzione

Nella cognizione sociale umana, le prime impressioni sono essenziali: basate sull'inferenza di tratti caratteriali a partire da segnali non verbali come espressioni facciali e tono di voce, ci consentono di orientarci nelle interazioni con gli sconosciuti. Tuttavia, l'ascesa dei *social media* ha trasformato profondamente il contesto dei nostri primi incontri: quando conosciamo qualcuno *online*, non possiamo accedere a molte delle informazioni su cui abitualmente facciamo affidamento, e le impressioni si costruiscono sulla base di indizi quantitativamente e qualitativamente distinti rispetto agli incontri dal vivo, come immagini statiche e brevi contenuti testuali. In che modo questi segnali vengono integrati per costruire l'immagine di uno sconosciuto?

Metodi

Per esplorare questa questione, abbiamo condotto uno studio sulle applicazioni di *dating online*, analizzando come foto e descrizioni testuali (bio) interagiscano nella percezione dei profili. Dopo una valutazione preliminare dei materiali, abbiamo creato profili combinando tre livelli di attrattività per le foto (alta, media, bassa) con bio positive o negative, sottoponendoli alla valutazione di 132 partecipanti. Per esaminare correttamente l'interazione tra le due componenti, in una prima fase i profili venivano valutati sulla base della sola foto, e successivamente veniva aggiunta la bio - misurando eventuali cambiamenti nelle impressioni dei partecipanti.

Risultati

I risultati mostrano che l'attrattività visiva favorisce valutazioni positive, ma la componente testuale –soprattutto se negativa –può riorientare significativamente la percezione. La formazione di impressioni *online* emerge quindi come il prodotto dinamico dell'interazione tra segnali visivi e testuali, modulata da fattori individuali quali genere ed esperienza pregressa nell'uso della piattaforma.

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Emotions and motivation 1 / 517

Rilevazione della sincronizzazione fisiologica nel servizio di counseling universitario

Authors: Alessandro Piro¹; Antonietta Curci²; Ivan Mangiulli³

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La condivisione emotiva in psicoterapia, e più in generale nelle relazioni d'aiuto, risulta fondamentale nella costruzione di un legame positivo, cooperativo ed efficace. Tale connessione potrebbe riflettersi nella sincronizzazione tra i membri della diade, rilevabile attraverso pattern misurabili di allineamento nelle risposte fisiologiche durante l'interazione. Il presente studio coinvolge utenti del Servizio di Counseling Psicologico dell'Università di Bari e gli operatori del Servizio. L'obiettivo è valutare i processi di sincronizzazione nelle relazioni di aiuto, integrando misure esplicite (e.g., regolazione emotiva, alleanza terapeutica e benessere psicologico generale) e fisiologiche come battito cardiaco e conduttanza cutanea (i.e., HR e SCL) rilevate tramite dispositivi non-invasivi (Empatica E4 wristband). Prima dell'avvio della sessione, i componenti delle diadi, compilano una batteria di test di rilevazione esplicita. Inoltre, tramite l'uso di Empatica E4 vengono raccolti parametri fisiologici durante la visione di un video neutro, che verranno poi messi a confronto con i parametri registrati nel corso del colloquio. Terminato il primo colloquio, entrambi compilano un ulteriore questionario sulla regolazione emotiva e sull'alleanza terapeutica. Tale procedura è ripetuta anche durante il terzo ed il quinto incontro, al fine di investigare l'andamento della relazione studente-terapeuta. In linea con la letteratura, i risultati mostrano un trend di aumento di sincronizzazione all'interno della diade nel corso degli incontri, rilevabile dalle misure esplicite e fisiologiche. I risultati dimostrano che il percorso di counseling universitario impatta efficacemente sugli studenti in termini di alleanza terapeutica, riducendo sintomi di distress, incrementando di contro la regolazione emotiva e promuovendo il benessere.

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Attention / Language / 917

Searching for early cognitive and neural biomarkers of Developmental Dyslexia: preliminary findings.

Author: Desirè Carioti¹

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Introduction: Developmental Dyslexia (DD) is a prevalent learning that impairs reading acquisition and fluency. Due to its moderate-to-high heritability, the risk of DD rises by 40% with a first-degree relative's diagnosis. The present study uses a recently developed battery of non-verbal cognitive assessment tasks, the ReadFree Screening Tool (RFST), and multimodal MRI measures, to investigate whether multivariate machine learning can facilitate early DD identification.

Method: We designed a longitudinal study, including two sessions: (1) Second-grade children complete the RFST and 3T MRI scanning. As a fMRI task, we used an adapted version of the RFST's irregular visual Go/No-Go task. (2) One year later, children are re-assessed with standardized DD diagnosis tests.

17 children (mean age = 7.5, SD = 0.18) have been tested so far. Based on parental reports of familial reading difficulties and developmental cognitive disorders, a familial risk index was calculated.

Results: Behavioral results revealed significant correlations between reading skills, phonological processing, and performance on two RFST tasks, namely the Go/No-Go, tackling inhibitory control mechanisms, and the Rhythmic Tapping task, tackling predictive anticipation and synchronization. Functional MRI results showed No-Go activation in inhibitory-control regions and associations between these activated regions, reading and phonological skills. The familial risk index was negatively associated with activation of the orthographic-phonological brain network.

Discussion: Our preliminary findings suggest that the RFST tasks could help identifying children

at risk of DD. The combination of cognitive and multimodal neuroimaging measures is a promising approach for an early detection of DD.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Methodology 1 / 489

Profili Temperamentali nei giovani adolescenti: uno studio sulla replicabilità empirica

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La letteratura sul temperamento in infanzia e adolescenza ha una tradizione molto forte e antica nel tempo. Sebbene dal punto di vista teorico ci sia un forte ancoraggio, a livello empirico i risultati sull'identificazione di profili temperamentali, che tengano conto di pattern specifici di funzionamento, risultano ad oggi inconsistenti ed ambigui. La presente proposta vuole contribuire al superamento di queste limitazioni empiriche, replicando una struttura temperamentale precedentemente identificata in un campione cross-culturale, che considerava le osservazioni genitoriali degli adolescenti considerati. Il presente lavoro, al contrario, considera le auto-valutazioni, con l'obiettivo di validare la struttura identificata in precedenza.

Il campione considerato si compone di 339 adolescenti italiani (EtàMedia=15.35; Dev.St.=.64; 36% ragazze), che hanno compilato l'Early Adolescent Temperament Questionnaire nelle tre sottodimensioni dell'Effortful Control-EC (controllo inibitorio, attivazione, e attenzione), nonché in due domini di emozionalità negativa-NE (rabbia/frustrazione e tristezza).

I risultati dei modelli di Latent Profile Analysis mostrano una struttura temperamentale che ricalca quella identificata nello studio precedente, caratterizzata da: a) un profilo Adattato (caratterizzato da livelli alti di EC e bassi di NE); b) un profilo Medio (caratterizzato da livelli medi di EC e di NE); c) un profilo Emotivo (caratterizzato da livelli medi di EC e alta rabbia/frustrazione); d) un profilo Disregolato (caratterizzato da livelli bassi di EC ed alti di NE). Questo lavoro rappresenta un passo avanti per l'identificazione e la validazione di una struttura temperamentale esaustiva del funzionamento in adolescenza, basata sui domini di autoregolazione ed emozionalità negativa, in quanto supporta e sostiene gli studi precedenti.

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No

Memory / 954

Orientarsi nel Corpo e nello Spazio: Connessione tra Interocezione e Memoria Socio-Spaziale durante l'Invecchiamento

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Negli anziani, l'esplorazione dell'ambiente esterno è fortemente modulata da componenti sociali, che influenzano sia la rappresentazione spaziale che le risposte emotive. La letteratura ha evidenziato che la codifica dello spazio si basa su un sistema di riferimento egocentrico (soggetto-oggetto) ed uno allocentrico (oggetto-oggetto), entrambi suscettibili all'influenza di stimoli sociali con valenza emotiva (positiva o negativa). Parallelamente, ulteriori evidenze suggeriscono una stretta connessione tra processi socio-relazionali e abilità interocettive, ossia la capacità di percepire gli stati corporei interni. Con l'avanzare dell'età, tuttavia, si osserva un deterioramento sia delle competenze socio-emotive e interocettive, sia della codifica spaziale, in particolare nella componente allocentrica. In questo studio, abbiamo indagato se, e in che misura, le variazioni nelle abilità interocettive influenzino la rappresentazione spaziale di stimoli sociali in adulti giovani e anziani. A tal fine, 40 partecipanti (20 giovani adulti e 20 anziani) hanno completato questionari sulla consapevolezza interocettiva e, successivamente, hanno svolto un compito di giudizio metrico in realtà virtuale immersiva. Durante il compito, i partecipanti dovevano memorizzare la posizione di avatar con espressioni facciali felici, neutre o arrabbiate, e stimare le loro distanze rispetto a sé (codifica egocentrica) o a un altro avatar (codifica allocentrica). I risultati hanno mostrato che la componente allocentrica, cruciale nella codifica sociospaziale, era deficitaria negli anziani in particolare con gli stimoli negativi. Inoltre, gli aspetti interocettivi predicevano le performance egocentriche ed allocentriche negative, seppur con pattern differenti tra giovani e anziani, dimostrando il forte legame tra la consapevolezza interocettiva e la rappresentazione dell'ambiente esterno.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Emotions and motivation 1 / 734

BRAIN CORRELATES OF BITTERSWEETNESS – A SYSTEMATIC AND CRITICAL REVIEW

Authors: Valentina Cesari¹; Giada Lettieri¹; Luca Cecchetti¹

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Mixed affect is characterized by the simultaneous existence of two emotional states, often of opposite valence. To illustrate, remembering a lost love may elicit feelings of warmth and sadness, promoting a sense of bittersweetness. However, the nature of mixed affect remains theoretically debated, with some theories proposing true simultaneous coactivation, and others suggesting rapid alternation between opposite emotions. Recent neurobiological models offer potential insights into this debate, yet progress is limited by methodological inconsistencies, such as non-standardized stimuli and blurred distinctions between personal experience and judgment of stimulus ambivalence.

Here, we synthesized findings on brain correlates of emotional ambivalence, distinguishing between first-person experience (i.e., felt ambivalence) and stimulus-centered (i.e., perceived ambivalence). Key dimensions—such as the type of ambivalence (first person vs stimulus-centered), and type of assessment (explicit vs. implicit)—are examined to characterize mixed emotions at both cerebral and phenomenological levels.

Following PRISMA guidelines, two systematic searches were conducted in MEDLINE, Scopus, and Google Scholar up to December 2024 using appropriate keywords, identifying sixty-nine studies for inclusion.

Results show that the majority of studies investigated stimulus-centered ambivalence. Explicit measures were common in first-person experience, while stimulus-centered studies used indirect methods like affective norms. Brain regions consistently engaged during felt and perceived ambivalence include the anterior and posterior cingulate cortex, ventrolateral and ventromedial prefrontal cortex, and amygdala.

This review integrates current knowledge on the brain correlates of ambivalence, highlights key methodological limitations, and offers directions for future research, particularly regarding ambivalence's role in coping and emotional resilience.

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Attention / Language / 783

Exploring the multimodal neural representations of words

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Recent studies investigating word processing highlighted the role of both linguistic (Anceresi et al. 2024) and sensory information, particularly visual information (Petilli et al., 2021), in shaping semantic representations. The present study aims to elucidate the relative contribution of linguistic and visual information to the neural representations of words, by re-analyzing a series of existing EEG/ERPs datasets covering different tasks. Using Representational Similarity Analysis (RSA), we test whether similarity patterns of brain activation to words can be predicted by their linguistic similarity and by the visual similarity of the corresponding concepts, as extracted from computational models (Petilli et al., 2021). Key questions include: i) does visual information contribute to semantic memory over and above linguistic experience? ii) do these effects have similar timing and topographies? iii) is visual information accessed even in the absence of a semantic task? iv) do we get similar results when using an approach based on sensorimotor norms (e.g. Binder et al., 2016)? Findings across all datasets, tasks, and approaches will be transparently reported.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Social Cognition / 959

Contrari ma coerenti: uno studio di replica di Moscovici et al., 1969

Authors: Sofia Sorvillo¹; Federica Scarci²; Lucrezia Firrincieli¹; Francesco Barbonetti³; Stefano Livi¹

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In antitesi rispetto alla tradizionale ricerca sul conformismo, Moscovici, Lage e Naffrechoux (1969) hanno condotto tre pionieristici esperimenti sull'influenza minoritaria mostrando come una minoranza coerente —che risponde in maniera antitetica rispetto alla norma ma mantiene la sua posizione con fermezza —possa persuadere la maggioranza ad adottare il proprio punto di vista. Sulla scia dell'impegno mostrato dalla comunità scientifica nel documentare l'estensione della replicabilità in psicologia, obiettivo del presente studio è stato quello di replicare i risultati del primo e terzo esperimento di Moscovici e colleghi (1969).

Replicando la metodologia adottata negli studi originali, ai partecipanti è stato richiesto di esprimere,

a turno, un giudizio sull'intensità luminosa e sulla tonalità di 36 diapositive blu. Nelle due condizioni sperimentali, all'interno di ciascun gruppo formato da sei persone, due confederati hanno avuto l'obiettivo di influenzare le risposte degli altri partecipanti esprimendo valutazioni contrarie alle normali aspettative, ossia dicendo "verde" di fronte a tutte le 36 diapositive (condizione di "coerenza") o a due terzi di esse (condizione di "incoerenza"). Nel gruppo di controllo, non essendo presenti confederati, i partecipanti sono stati invece liberi di esprimere le proprie valutazioni senza influenze esterne.

Utilizzando il numero di diapositive valutate come verdi come variabile dipendente, sono state condotte analisi preliminari (ANOVA) su 104 partecipanti. I test post-hoc hanno rivelato una differenza statisticamente significativa tra il gruppo di controllo ed entrambe le condizioni sperimentali ma —diversamente dagli studi originali— non tra quest'ultime, suggerendo l'utilità di riflettere sulla definizione di coerenza come inflessibile ripetizione.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Methodology 1 / 502

Love Sync: Emotional Linkage in Romantic Couples

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Background

Emotional linkage between romantic partners fosters intimacy, empathy, and relationship satisfaction. However, previous studies offer mixed evidence, with some highlighting interdependence and others revealing substantial variability across couples.

Methods

To investigate this further, we conducted a 30-day experience sampling study with 77 Italian romantic couples. Participants completed brief questionnaires on their emotional states and partner-related experiences five times per day. We analyzed the data using multilevel modeling and network analysis.

Results

We found overall trends of emotional interdependence, alongside notable heterogeneity between couples. Gender differences emerged in the patterns of emotional connection. Specifically, women's momentary affect was predicted by both the positive and negative affects of their male partners. In contrast, men's emotional states were influenced only by their partners' positive emotions. This suggests that women may be more attuned to a broader range of their partner's emotional cues, while men might focus on a single dominant emotional tone.

Conclusions

Our findings underscore the complexity of emotional dynamics in romantic relationships, marked by both general patterns and individual differences. The observed gender differences point to the importance of considering gender-specific emotional sensitivities in both research and interventions aimed at enhancing emotional bonds between partners. The intensive longitudinal design and fine-grained analytic approach proved crucial in capturing these subtle and dynamic emotional interdependencies.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

“Typical and Atypical” Aging: From Cognitive Aging to Neurocognitive Disorders / 589**“Typical and Atypical” Aging: From Cognitive Aging to Neurocognitive Disorders****Author:** Paolo Taurisano¹**Co-author:** Martina Amanzio²¹ *Università degli Studi di Bari “Aldo Moro”*² *Università degli Studi di Torino***Corresponding Authors:** martina.amanzio@unito.it, paolo.taurisano@uniba.it

As the population is getting older, the prevalence of cognitive impairment and dementia is increasing, and it is important to (better) understand the risk factors, as well as the protective factors determining cognitive aging. Although early pathologic changes in AD have received the majority of attention, burgeoning literature also recognizes the role of factors such as cognitive reserve, executive functioning, and psychosocial factors as contributors to resiliency.

Part of new cross-disciplinary approaches in cognitive neuroscience and experimental psychology, the current symposium aims to elucidate the intricate interrelations between biological, psychological, and social determinants of successful/unsuccessful aging. Topics will cover identifying early symptoms of executive dysfunction through psychophysiology and imaging, emphasizing the involvement of prefrontal cortex activity to support cognitive control.

The remainder of this Research Topic will investigate differences in perceptual inference and oscillatory brain activity as potential markers of aging-related cognitive-process alterations. The interplay of brain reserve, resilience, and social isolation will also be discussed, including how these components can potentially interact to impact susceptibility to cognitive decline. Recent results on resting-state gamma activity as a potential marker of associative memory decline, as well as data associating depressive symptoms and amyloid pathology with accelerated preclinical cognitive decline, will also be presented.

Lastly, the symposium will consider the promise of non-invasive brain stimulation approaches, including novel means for personalizing interventions that could ameliorate cognitive decline and promote well-being in an aging population.

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No

Sharper minds, Smarter athletes: the Cognitive Side of Sports / 584**Sharper minds, Smarter athletes: the Cognitive Side of Sports****Authors:** Andrea Casella¹; Irene Leo²; Lorenzo Pia³; Luca Bovolon⁴; Luisa Girelli⁵; Simona Perrone⁶; Valentina Bianco⁷¹ *Università Foro Italico Roma*² *Università di Padova*³ *Università di Torino*⁴ *Università di Chieti e Pescara*⁵ *Università Milano Bicocca*⁶ *Dipartimento di Psicologia, Università di Milano-Bicocca*⁷ *Universita di PAVIA*

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The symposium examines the cognitive and neuropsychological foundations of athletic performance, with a focus on how sports practice both engages and shapes higher-order mental functions. Drawing on converging evidence from neuroscience, psychology, and motor sciences, the symposium tackles aspects related to flow state, effort, cognitive-motor training, perceptual learning and concussion. The first presentation unveils the neurophysiological correlates of the flow state in athletes. The second presentation addresses the neurophysiological signatures of sustained effort during complex tasks, using EEG measures to investigate cortical dynamics under varying cognitive and physical loads. The third contribution explores the efficacy of dual-task cognitive-motor training paradigms, especially when mediated by virtual-reality technologies, on enhancing executive functioning in athletes. The fourth presentation investigates the influence of sports-specific expertise on audiovisual integration, comparing racket sport athletes and swimmers. The impact of sports-related concussion on cognitive functioning is addressed in the last study, highlighting subtle neurocognitive alterations that often elude standard clinical evaluation. Overall, the symposium offers a multidisciplinary perspective on the cognitive underpinnings of sports performance, with implications for training design, injury management, and athlete development.

If you're submitting a symposium talk, what's the symposium title?:

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No

Interazione Geni x Ambiente: le potenzialità del modello preclinico / 905

Interazione Geni x Ambiente: le potenzialità del modello preclinico

Authors: Donald Ielpo¹; Valeria Tarmati²; Camilla Mancini³; Alice Passeri⁴

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L'interazione tra predisposizione genetica e fattori ambientali (gene x ambiente, GxE) è un tema centrale nella psicologia sperimentale, poiché la loro complessa interdipendenza gioca un ruolo cruciale nello sviluppo psicologico e comportamentale. L'utilizzo di modelli preclinici, che permettono di controllare sperimentalmente specifici fattori genetici ed ambientali, offre opportunità uniche per esplorare i meccanismi neurobiologici alla base delle differenze interindividuali, sia in condizioni normali che divergenti. I modelli murini rappresentano uno strumento di grande rilevanza traslazionale, essenziale per lo studio dell'interazione GxE. Nel presente contributo saranno presentati quattro studi su modelli murini che investigano tale interazione, evidenziandone il valore traslazionale.

Utilizzando un modello di delezione di un gene coinvolto nella dislessia evolutiva, il primo studio indaga il ruolo di questa alterazione genetica nello sviluppo delle abilità attentive che nell'uomo sono necessarie per la lettura, proponendo un potenziale punto di partenza per una diagnosi precoce e un trattamento personalizzato.

Il secondo studio indaga differenze di attivazione neurale genotipo-dipendenti in un modello di disturbo post-traumatico da stress (PTSD).

Il terzo studio, utilizzando un modello precoce di alterazione del legame di attaccamento, indaga meccanismi neurobiologici che sottendono il recupero indotto da un fattore protettivo ambientale. Infine, il quarto studio indaga l'eventuale divergenza di percorsi neurobiologici sottostanti lo sviluppo di un fenotipo simil-depressivo indotto da diverse esperienze precoci in un campione subclinico e in un modello preclinico.

Questi quattro studi condividono l'obiettivo di evidenziare potenziali target utili per sviluppare interventi personalizzati.

If you're submitting a symposium talk, what's the symposium title?:

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Yes

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative / 980

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative

Author: Alice Chirico¹

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Il simposio si propone di esplorare le dinamiche emotive nell'era digitale, analizzando l'interazione tra esperienze reali e quelle mediate o generate dalla tecnologia. L'obiettivo è superare una visione statica delle emozioni, valorizzandone gli aspetti dinamici sia nei metodi di analisi sia nelle modalità di presentazione degli stimoli.

Verranno presentati risultati sperimentali sull'impatto dell'origine percepita (umana o artificiale) nella risposta emotiva alla musica, mostrando come l'attribuzione dell'intenzionalità influenzi l'intensità e la complessità dell'esperienza emotiva (Sarcinella et al.).

Il simposio introdurrà anche strumenti innovativi per l'indagine delle emozioni in contesti immersivi e tridimensionali, come una libreria di ologrammi sociali sviluppata per promuovere l'elaborazione emotiva situata, con elevata validità ecologica (Simoncini et al.).

Sul piano metodologico, verranno illustrate tecniche analitiche avanzate –tra cui modelli DSEM (Dynamic Structural Equation Modeling) e catene di Markov –che permettono di descrivere con maggiore profondità le transizioni affettive e l'inerzia emotiva nel tempo, offrendo implicazioni rilevanti per la comprensione della regolazione e della resilienza emotiva (Borghesi et al.).

Infine, una panoramica scientometrica sulla letteratura relativa alle emozioni in ambito clinico, con focus sulla malattia di Parkinson, mostrerà l'importanza dell'integrazione tra prospettive neurofisiologiche, cliniche e terapeutiche nel guidare la ricerca futura (Pedroli et al.).

Nel complesso, il simposio offrirà una prospettiva integrata e multidisciplinare, connettendo ricerca sperimentale e metodologie computazionali per avanzare nella comprensione e valutazione delle emozioni.

If you're submitting a symposium talk, what's the symposium title?:

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No

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali / 636

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali

Authors: Alessandro Oronzo Caffò¹; Federica Biassoni²; Luigi Tinella³

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Il comportamento di guida è un dominio privilegiato per osservare la complessità delle interazioni tra funzioni cognitive, processi decisionali, sistemi di valori e contesti ambientali. Lontano dall'essere un'attività automatica o puramente tecnica, la guida si configura come comportamento adattivo, multidimensionale e dinamico, che evolve nel tempo e si declina in modi diversi a seconda delle caratteristiche individuali, tecniche e ambientali.

Il simposio raccoglie contributi, diversi per approccio e target, ma inseriti in un frame di ricerca integrato volto a esplorare come psicologia sperimentale e misurazione possano contribuire alla comprensione e al miglioramento della sicurezza stradale. Quattro linee tematiche emergono e si intrecciano: il rapporto tra funzioni cognitive e condotta di guida, la relazione tra stili di guida e performance di guida simulata, le determinanti psicologiche della trasgressione e il ruolo dei fattori attentivi/percettivi nella regolazione del comportamento al volante.

Sul piano cognitivo, la riflessione si sposta dall'idea di competenza "statica" a quella di funzione in trasformazione, con attenzione a traiettorie dell'invecchiamento e correlati psicometrici dell'idoneità alla guida. Parallelamente, il confronto tra misure auto-riferite dello stile di guida e prestazioni in simulatori a bassa-vs-alta fedeltà mostra coerenze e specificità di ciascun contesto di misurazione. Inoltre, il concetto di disimpegno morale apre una prospettiva nuova su comportamenti trasgressivi, non più spiegabili solo in termini di impulsività/deficit di controllo, ma anche come esito di processi regolativi e giustificativi di natura cognitivo-morale. Infine, l'interesse per le dinamiche della distrazione sollecita modelli interpretativi capaci di integrare differenze individuali, stimoli ambientali e carico percettivo.

If you're submitting a symposium talk, what's the symposium title?:

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No

Interazione Geni x Ambiente: le potenzialità del modello preclinico / 1014

Introduzione

Corresponding Author: camilla.mancini@unicam.it

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative / 1017

introduzione

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali / 788

Limitazioni alla guida e preservazione delle abilità cognitive. Uno studio longitudinale

Authors: Stefania Balzarotti¹; Federica Biassoni¹

¹ *Dipartimento di Psicologia, Università Cattolica del Sacro Cuore*

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L'invecchiamento comporta il fisiologico declino di alcune abilità cognitive legate alla guida. Per questo motivo molti Paesi tra i quali l'Italia hanno adottato politiche di screening per valutare l'idoneità alla guida negli automobilisti più anziani. Il presente studio esamina se le abilità cognitive legate alla guida cambino nel tempo, confrontando conducenti anziani soggetti a restrizioni da parte delle autorità di rilascio della patente con quelli che, dopo una prima valutazione, non sono soggetti a restrizioni.

Il campione include 58 conducenti anziani cognitivamente sani (età media = 82,79 anni, DS = 6,13; 97% uomini), sottoposti a una seconda valutazione (T2) dopo un periodo da uno a quattro anni dalla prima valutazione. Le valutazioni sono state condotte utilizzando la batteria DRIVESTA del Vienna Test System.

I tempi di reazione, il tempo di reazione sotto stress e la capacità di ottenere una visione d'insieme non hanno mostrato cambiamenti significativi tra T1 e T2. Al contrario, si evidenzia un calo significativo della performance alle prove che misurano l'attenzione selettiva e il ragionamento logico-deduttivo in entrambi i gruppi. A T2 i conducenti soggetti a restrizioni (n = 41) hanno registrato prestazioni significativamente peggiori rispetto ai conducenti non soggetti a restrizioni (n = 17). Nel complesso, i risultati mostrano che, sebbene le abilità cognitive legate alla guida rimangano relativamente stabili nel breve termine, il declino di alcune funzioni cognitive merita attenzione e suggerisce la necessità di un monitoraggio costante.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Sharper minds, Smarter athletes: the Cognitive Side of Sports / 603

EEG Correlates of the Flow State During Sports Performance

Authors: Lorenzo Pia¹; Andrea Filippo Rosso²; Gianluca Rosso²; Giovanni Rebaudo³; Michele Guindani⁴; Giorgio De Pieri⁵; Raffaella Ricci¹

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The flow state is defined as an optimal state of consciousness in which athletes experience total absorption, feelings of being extremely focused, and prolonged pleasantness. Such a concept has recently received particular interest in sports science because of a possible tight relationship with enhanced athletic performance. Hitherto, the attempts to investigate the neural correlates of the flow state are scarce and, most importantly, often limited to a laboratory setting. However, the advancements in neuroscience measurement technologies, particularly the development of portable and low-cost EEG technology, allow applications across a variety of fields, which, in turn, facilitates widespread use and accessibility. Here we will present data obtained through a wearable and

non-invasive neurotechnology device (Muse 2), which transmits raw wave data from the prefrontal cortex. This data is expressed numerically in microvolts with a sampling frequency of 256Hz. Such a system is based on an innovative mathematical model and can obtain online and standardized neural signatures of the flow state of athletes. The device has been tested in golf with the Golf Us Performance Center coaches.

If you're submitting a symposium talk, what's the symposium title?:

Symposium Title: Sharper minds, Smarter athletes: the Cognitive Side of Sports

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No

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders / 590

Brain reserve, gender, and social isolation: Implications for cognitive resilience in aging

Author: Paolo Taurisano¹

Co-authors: Aurora Bonvino ²; Daphne Gasparre ³; Ester Cornacchia ; Giorgia Francesca Scaramuzzi ⁴; Valerio Manippa

¹ *Università degli Studi di Bari "Aldo Moro"*

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Aging is a dynamic and multidimensional process shaped by the interaction between biological and psychosocial trajectories. Among the protective resources identified, brain reserve refers to the structural capacity of the brain to withstand damage. In contrast, cognitive reserve reflects its ability to maintain functioning through flexible and efficient processing strategies. Although these concepts are central to understanding resilience in aging, increasing evidence points to social isolation as a significant risk factor that may compromise their effectiveness.

Social isolation, often resulting from limited interpersonal contact and reduced social engagement, can diminish the cognitive stimulation and emotional support required to sustain mental functioning. When combined with low levels of cognitive reserve, this condition may intensify the impact of age-related changes, thereby accelerating the onset or progression of cognitive decline. These two vulnerabilities may reinforce one another, creating a cycle of increased risk that challenges the brain's ability to compensate for decline.

Recent data suggest that individuals experiencing persistent loneliness are more likely to show signs of cognitive vulnerability, particularly when structural and functional brain resources are limited. However, efforts to promote social connectedness and cognitively enriching experiences may strengthen resilience and delay clinical manifestations of decline.

These findings emphasize the importance of adopting a comprehensive model of aging that incorporates biological, psychological, and relational factors. Targeting cognitive and social domains could provide practical strategies to preserve functioning and improve quality of life in older adults.

If you're submitting a symposium talk, what's the symposium title?:

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders

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Interazione Geni x Ambiente: le potenzialità del modello preclinico / 912**Interazione tra gene e ambiente nella dislessia evolutiva: il contributo del modello preclinico DCDC2a****Author:** Donald Ielpo¹**Co-authors:** Matteo Di Segni ²; Chiara Mauri ²; Tommaso Ciceri ³; Denis Peruzzo ⁴; Valentina Lampis ²; Sara Bertoni ⁵; Andrea Facoetti ⁶; ROSSELLA VENTURA ⁷; Sara Mascheretti ²; Lucy Babicola ¹¹ Fondazione Santa Lucia IRCCS² IRCCS E. Medea dell'Associazione "La Nostra Famiglia"³ Department of Brain and Behavioral Sciences, University of Pavia⁴ tommaso.ciceri@lanostrafamiglia.it⁵ Department of Human and Social Sciences, University of Bergamo⁶ Department of General Psychology, University of Padova⁷ Dip Psicologia, Sapienza**Corresponding Author:** donald.ielpo@gmail.com

Introduzione: La dislessia evolutiva (DD) colpisce il 7% dei bambini in età scolare e comporta svantaggi nell'istruzione e occupazione. L'eziologia della DD ha alla base complesse interazioni gene-ambiente. In particolare, la delezione del gene DCDC2-READ1 (DCDC2d) è stata associata alle capacità di lettura influenzando l'attività eccitatoria-inibitoria fondamentale per lo sviluppo neurobiologico. Avvalendoci di un modello murino di DCDC2d abbiamo investigato il suo ruolo nel veicolare le traiettorie di (neuro)sviluppo, le capacità attentive e la memoria. Inoltre, sono stati selezionati e quantificati fattori epigenetici (microRNA) come potenziali biomarker per la precoce diagnosi clinica.

Metodi: dai primi giorni di vita fino allo svezzamento (giorno 4-28), in animali di controllo e con delezione del gene DCDC2a è stata valutata l'acquisizione dei riflessi e il loro comportamento di esplorazione e comunicazione (Vocalizzazioni, Open field, Homing). In età adulta è stata valutata la risposta a stimoli conflittuali (Y-maze) e lo span di memoria (spatial novelty).

Risultati: la delezione del gene DCDC2a induce una alterazione dello sviluppo di abilità motorie, favorendo iperattività in "adolescenza", con conseguente modulazione dell'attenzione in età adulta. Inoltre, diversi microRNA coinvolti nell'equilibrio eccitatorio-inibitorio sono risultati alterati.

Conclusioni: il modello preclinico si è rivelato un valido strumento per approfondire il ruolo della componente genetica nella DD, nonché nella sua abilità di interazione con l'ambiente. Oltre alle alterazioni comportamentali è stato possibile osservare una firma epigenetica indotta dal gene DCDC2a, che potrebbe costituire un promettente punto di incontro con la pratica clinica per implementare trattamenti specifici e favorire la diagnosi precoce.

If you're submitting a symposium talk, what's the symposium title?:

Interazione Geni x Ambiente: le potenzialità del modello preclinico

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative / 967**Libreria emotiva: interazioni tridimensionali per esplorare la consapevolezza emotiva****Author:** Gloria Simoncini¹**Co-authors:** Francesca Borghesi ²; Pietro Cipresso ³

¹ *Dipartimento di Psicologia, Università degli Studi di Torino*

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Il presente contributo descrive la costruzione e la validazione preliminare di una libreria di ologrammi sociali, progettata per indagare la consapevolezza emotiva delle proprie emozioni all'interno di situazioni interpersonali credibili e coinvolgenti. Gli stimoli consistono in ricostruzioni tridimensionali dinamiche di persone reali impegnate in interazioni diadiche o gruppal, ottenute attraverso riprese volumetriche in grado di restituire profondità e corporeità agli attori rappresentati. In questa fase, le scene sono prive di un ambiente tridimensionale definito, così da isolare e valorizzare esclusivamente la forza comunicativa delle dinamiche relazionali.

Il progetto si è articolato in due fasi. Nella prima, una pre valutazione da parte di esperti ha permesso di analizzare ogni scena rispetto a quattro dimensioni fondamentali: coerenza narrativa, verosimiglianza, rilevanza emotiva e leggibilità affettiva. La seconda fase ha previsto una valutazione di usabilità con un campione di partecipanti sani, che hanno esplorato le scene utilizzando il software MeshViewer. La valutazione si è concentrata principalmente sugli aspetti tecnologici, come la qualità visiva, l'intuitività dell'interfaccia e la fluidità dell'interazione. I risultati hanno evidenziato un'elevata fruibilità degli stimoli, anche in assenza di familiarità con ambienti immersivi.

L'impiego di ologrammi volumetrici consente di rappresentare in modo realistico le interazioni sociali, promuovendo un'elaborazione emotiva situata; inoltre, la modularità degli stimoli ne facilita l'uso in contesti sperimentali e formativi. Tra le criticità emerse si segnalano la necessità di risorse hardware avanzate e l'assenza, per ora, di ambientazioni contestuali. Nonostante ciò, i risultati confermano il potenziale applicativo della tecnologia per strumenti valutativi ad alta validità ecologica.

If you're submitting a symposium talk, what's the symposium title?:

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Sharper minds, Smarter athletes: the Cognitive Side of Sports / 706

Neurophysiological Correlates of Effortful Task Performance

Author: Luca Bovolon¹

Co-authors: Jesus Díaz-García ¹; Chiara Conti ¹; Federico Nigro ²; Sandro Bartolomei ²; Samuele Maria Marcora ²; Marika Berchicci ¹

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Perception of effort (PE) is a multifaceted construct, partly arising from corollary discharge mechanisms associated with increased central motor command (Marcora, 2009). Crucially, it is the subjective experience of effort—rather than objective task difficulty—that has been identified as the primary determinant of physical task engagement (Greenhouse-Tucknott et al., 2022). This study investigated the neurophysiological correlates of PE and examined the modulatory effects of a Mindfulness-Acceptance-Commitment (MAC) intervention. Using a 2×2 within-between design, 48 young adults were randomly assigned to either an intervention or control group. The intervention involved a 4-week MAC protocol comprising six weekly group sessions (30 min) and daily individual practices (15 min). Controls engaged in time-matched daily web surfing. Electroencephalography and surface electromyography were recorded pre- and post-intervention as participants completed 4 blocks

of 60 right leg extensions at 30% of maximal voluntary contraction (MVC). Subjective ratings of effort (RPE), pain, and fatigue were collected at multiple timepoints throughout the task. Movement-related cortical potentials (MRCs) were extracted and correlated with RPE and pain self-report. Muscular fatigue (MF) was assessed via MVC and sEMG root mean square. We hypothesize that the intervention group will exhibit reduced PE in the absence of MF differences, and lower prefrontal and motor cortical activity, correlating with decreased RPE but not pain or fatigue. These findings aim to advance our understanding of the neural underpinnings of PE and transient fatigue, and to highlight the potential of MAC-based approaches for reducing PE in both healthy and clinical populations.

If you're submitting a symposium talk, what's the symposium title?:

Sharper minds, Smarter athletes: the Cognitive Side of Sports

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali /
526

Quando la morale passa con il rosso: Validazione della Scala MORDE (Moral Disengagement in Road Driving Evaluation), prima misura del disimpegno morale nella guida trasgressiva

Authors: Pierluigi Cordellieri¹; Laura Piccardi²; Raffaella Nori³; Paola Guariglia⁴; Marco Giancola⁵; Alessia Bonavita⁶; Massimiliano Palmiero⁷; Anna Maria Giannini⁸

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⁶ Università telematica Giustino Fortunato

⁷ Dipartimento di scienze della comunicazione, università degli studi di Teramo

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Il presente contributo introduce la scala MORDE (Moral Disengagement in Road Driving Evaluation), uno strumento psicométrico volto a misurare l'applicazione dei meccanismi di disimpegno morale, teorizzati da Bandura (1991), nel dominio della sicurezza stradale. L'obiettivo è stato quello di adattare il costrutto teorico ai comportamenti di guida, con particolare riferimento ai processi cognitivi che giustificano le infrazioni o la mancata assunzione di responsabilità verso altri utenti della strada.

La versione iniziale della scala, composta da 24 item, è stata costruita con il contributo di due esperti, che –attraverso un'analisi qualitativa basata su criteri di aderenza teorica e rappresentatività semantica –hanno selezionato item riferibili agli otto meccanismi del disimpegno morale. Un'analisi fattoriale esplorativa (EFA) è stata condotta su un campione di 333 soggetti (140 maschi, 193 femmine, età media = 29 anni, DS = 14,2), tutti guidatori attivi. I risultati hanno evidenziato una struttura bifattoriale: (a) Giustificazione normativa della trasgressione e (b) Attribuzione di colpa e responsabilità agli altri. Tali fattori riflettono due modalità distinte di razionalizzazione del comportamento trasgressivo alla guida.

La struttura è stata confermata tramite analisi fattoriale confermativa (CFA) su un secondo campione indipendente di 304 partecipanti (146 maschi, 158 femmine, età media = 32 anni, DS = 15), con buoni indici di adattamento (RMSEA = 0.0600; CFI = 0.919; TLI = 0.904; SRMR = 0.0517). La scala ha inoltre mostrato buona validità concorrente con il questionario di Caprara et al. (2006) e validità predittiva rispetto ai fattori del Driver Behaviour Questionnaire (DBQ).

If you're submitting a symposium talk, what's the symposium title?:

Driving and Mobility: a Psychological Perspective on Assessment and Intervention Techniques

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders / 608

Early detection of executive (dys)functions as a neuropsychophysiological biomarker for cognitive changes and cognitive impairment

Author: Martina Amanzio¹

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As the world's population continues to age, the promotion of healthy cognitive ageing is becoming increasingly important. While Alzheimer's research has traditionally focused on identifying risk factors and early biomarkers of the disease, comparatively less attention has been paid to protective factors such as cognitive reserve (CR). Cognitive reserve serves as a dynamic mediator that enables the brain to adapt to and compensate for age-related neuronal changes. It supports both cognitive performance and emotional regulation and can delay the onset of cognitive impairment.

Executive functions (EF) —including inhibition, cognitive flexibility and updating —are closely linked to CR and fall under the broader concept of cognitive control (CC). These top-down processes, which are essential for goal-directed behaviour, are primarily supported by the prefrontal cortex (PFC), one of the brain regions most susceptible to age-related decline.

Neuropsychophysiological and imaging techniques are increasingly being used to investigate the neural correlates of CC and EF in older adults. Particular attention is being paid to the early detection of executive dysfunction in individuals in the early stages of cognitive decline, from SCD to MCI.

Understanding how the ageing PFC maintains, compensates for, or fails to recruit neural resources is critical for assessing cognitive trajectories and developing targeted interventions. Identifying early neurophysiological markers of executive control dysfunction can support the development of cognitive training strategies aimed at maintaining autonomy and improving quality of life in older adults at risk of cognitive decline.

If you're submitting a symposium talk, what's the symposium title?:

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Interazione Geni x Ambiente: le potenzialità del modello preclinico / 907

Differenze individuali nei circuiti neurali coinvolti in un modello animale di Disturbo Post-Traumatico da Stress

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Introduzione: Il disturbo post-traumatico da stress (PTSD) è una psicopatologia caratterizzata da cambiamenti neurali eterogenei che rendono difficile l'identificazione di un trattamento efficace per tutti i pazienti. Una delle caratteristiche principali del PTSD è la forte risposta emozionale negativa – che cresce nel tempo – provocata dagli stimoli condizionati associati all'evento traumatico anche se l'evento non si ripresenta. Utilizzando l'aumento della risposta emozionale di paura nel tempo indotta dallo stimolo condizionato, modellato dal paradigma del fear incubation, l'obiettivo del presente studio è quello di investigare i circuiti neurali attivati dall'espressione della paura incubata in un modello murino di differenze individuali dipendenti dal genotipo, in ceppi inbred C57BL/6J (C57) e DBA/2J (DBA).

Metodo: I topi C57 e DBA sono stati esposti ad un singolo addestramento in cui un tono (stimolo condizionato) è stato associato ad una scossa elettrica. Dopo l'addestramento, i topi sono stati riesposti solo al tono dopo 1 giorno o dopo 14 giorni e sono state valutate le risposte di paura indotte dallo stimolo condizionato e le attivazioni cerebrali sottostanti.

Risultato: Entrambi i ceppi hanno sviluppato una risposta di paura più alta quando riesposti allo stimolo condizionato dopo 14 giorni manifestando il fenomeno di incremento della risposta emozionale nel tempo. Tuttavia, sono emersi diversi pattern di connettività funzionale dipendenti dal genotipo alla base della stessa espressione comportamentale.

Conclusione: L'identificazione di meccanismi neurobiologici che sottendono queste differenze individuali nella connettività funzionale sono potenzialmente efficaci per lo sviluppo di approcci terapeutici mirati al singolo individuo.

If you're submitting a symposium talk, what's the symposium title?:

Interazione Geni x Ambiente: le potenzialità del modello preclinico

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative / 978

Il suono sembra reale? Uno studio esplorativo tra musica realizzata da compositore umano e compositore AI

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Negli ultimi anni, l'intelligenza artificiale (IA) ha trasformato il panorama artistico, influenzando profondamente la produzione, la vendita e fruizione di opere visive e musicali. Studi recenti hanno esplorato se e in quale misura gli individui provino emozioni o attribuiscono intenzionalità a opere visive astratte prodotte da IA, mostrando che i partecipanti tendono non solo a sperimentare emozioni, ma anche ad attribuire intenzioni espressive, indipendentemente dal contesto informativo ricevuto. Tuttavia, le emozioni risultano più intense quando l'opera è effettivamente di origine umana. Questo filone di ricerca si è finora concentrato quasi esclusivamente su stimoli visivi, mentre rimane ancora poco esplorata la dimensione uditiva. A tal fine, è stato adottato un disegno sperimentale fattoriale entro i soggetti (3 × 2, Priming × Provenienza), con 48 partecipanti che hanno ascoltato estratti musicali simili per stile e struttura, preceduti da informazioni sulla loro presunta origine (umana,

artificiale o non specificata), corretta solo nel 50% dei casi. I partecipanti hanno poi valutato ciascun brano in termini di piacevolezza, creatività, emozioni esperite e intenzioni percepite. I risultati mostrano che anche la musica generata dall'IA può suscitare emozioni significative e intenzionalità percepita, sebbene il coinvolgimento emotivo sia maggiore quando i brani sono attribuiti (correttamente o meno) a un autore umano. La musica umana ha inoltre evocato emozioni estetiche più complesse rispetto ai brani IA, associati principalmente a emozioni positive semplici. Lo studio evidenzia il ruolo della provenienza percepita nella risposta emotiva alla musica e apre nuove prospettive teoriche sull'estetica computazionale e la paternità artistica in era digitale.

If you're submitting a symposium talk, what's the symposium title?:

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali / 983

Oltre i limiti: assunzione del rischio e meccanismi di disimpegno morale nei conducenti esperti

Authors: Laura Piccardi¹; Pierluigi Cordellieri^{None}; Alessia Bonavita^{None}; Raffaella Nori^{None}; Paola Guariglia^{None}; Marco Giancola^{None}; Massimiliano Palmiero^{None}; Anna Maria Giannini^{None}

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Questo contributo approfondisce l'applicazione della scala MORDE (Moral Disengagement in Road Driving Evaluation) all'analisi dei comportamenti di guida in un campione di over 65, con particolare attenzione alle differenze di genere. La scala, già validata in un precedente studio, misura due dimensioni principali del disimpegno morale nella guida trasgressiva: giustificazione normativa e attribuzione di colpa agli altri. L'indagine ha coinvolto guidatori anziani attivi, considerando anche le principali dimensioni del Driver Behaviour Questionnaire (DBQ) e la misura del disimpegno morale generalizzato (Caprara et al., 2006). I risultati mostrano differenze legate all'età e al genere nei punteggi delle scale, suggerendo che nei guidatori senior l'assunzione di rischio sia legata a specifici profili di disimpegno morale. Le analisi statistiche indicano che i processi di razionalizzazione della condotta trasgressiva mutano con l'esperienza di guida, riflettendo strategie differenti nei più anziani rispetto ai giovani adulti. Questi risultati, in linea con la letteratura sulla moral disengagement theory (Bandura, 1991), offrono spunti utili per la progettazione di interventi di prevenzione e formazione personalizzati in funzione dell'età e del profilo motivazionale del conducente.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Sharper minds, Smarter athletes: the Cognitive Side of Sports / 876

The influence of a soccer-based cognitive-motor dual-task training in virtual reality on cognitive performance and related brain

processing

Author: Andrea Casella¹

Co-authors: Camilla Panacci²; Margherita Filosa¹; Merve Aydin¹; Luca Boccacci¹; BiancaMaria Di Bello¹; Sabrina Pitzalis¹; Francesco Di Russo¹

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Introduction. Proficient soccer players must process substantial amounts of information rapidly while under mental pressure¹. This behavior involves specific cognitive anticipatory and decision-making process where both precision and speed are optimized². While research in the area of sports specific motor training is abundant, the same cannot be said for the cognitive domain³.

Aim. The present study examines the impact of a sport-specific training program based on virtual reality (VR) in young soccer players on cognitive performance and related brain processing using the event-related potential (ERP) method.

Method. Participants were divided into two groups: a control group, which followed a standard soccer training program, and an experimental group, which followed the same training but underwent a VR session once a week.

Results. Results indicated that the experimental group showed a notable enhancement of anticipatory brain activity in the prefrontal negativity (pN). The motor preparatory activity in the premotor cortex, indexed by the Bereitschaftspotential (BP) component, was comparable. Response speed and accuracy were improved in the experimental group. This effect could be explained by increased sensorimotor integration by the prefrontal P1 (pP1) and increased post-perceptual cognitive processing, as decision-making indexed by the P3.

Discussion. This study demonstrated the beneficial effects of sport-specific CMDT VR training on the brain activity of semi-elite soccer players. The improvement of cognitive processes in the experimental group suggests that integrating this protocol into regular training routines may offer a notable advantage in effective cognitive processing, particularly in dynamic, high-stress situations commonly found in competitive sport.

If you're submitting a symposium talk, what's the symposium title?:

Sharper minds, Smarter athletes: the Cognitive Side of Sports

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

“Typical and Atypical” Aging: From Cognitive Aging to Neurocognitive Disorders / 596

Depression and Amyloid- β as Predictors of Cognitive Decline: Evidence from the ADNI Cohort

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Depression has been consistently identified as a potential risk factor for dementia, yet its role in the pathogenesis of Alzheimer's Disease (AD) remains unclear. This study investigated the interplay between depressive symptoms, amyloid- β pathology, cognitive decline, and functional abilities in the context of conversion to Mild Cognitive Impairment (MCI) or AD.

We analysed data from the Alzheimer's Disease Neuroimaging Initiative (ADNI), including 853 participants classified as healthy controls or patients with MCI. Participants were grouped as converters (N=280) or non-converters (N=573) based on progression to MCI or AD. Depression was assessed using the Geriatric Depression Scale (GDS), cognitive performance with the Mini-Mental State Examination (MMSE), daily functioning with the Functional Activities Questionnaire (FAQ), and amyloid- β pathology with the A β 42/40 ratio. Measures were collected at baseline and at the time of conversion for converters.

Baseline GDS scores predicted future conversion to MCI or AD ($p=.04$); however, this effect was no longer significant when amyloid- β levels were included in the model ($p=.13$). In converters, GDS scores did not mediate the relationship between amyloid- β and clinical outcomes (MMSE, FAQ, or time to conversion; $p>.308$). Nonetheless, GDS independently predicted MMSE scores ($p=.04$) and time to conversion ($p=.04$), even after adjusting for amyloid- β . Network analysis further revealed direct associations between GDS, amyloid- β , MMSE, FAQ, and conversion timing (weights between .03 and .09), with specific GDS items selectively linked to each outcome (weights between .02 and .38).

Depressive symptoms, particularly item-level variations, are intricately linked to cognitive and functional decline, with partial independence from amyloid- β pathology.

If you're submitting a symposium talk, what's the symposium title?:

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Interazione Geni x Ambiente: le potenzialità del modello preclinico / 909

Attaccamento e depressione: il ruolo protettivo dell'ambiente in un modello preclinico

Author: Camilla Mancini¹

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Introduzione:

Le esperienze precoci che influenzano il legame di attaccamento possono aumentare il rischio di sviluppare psicopatologia, come la depressione, in età adulta. La presenza di una figura accudente alternativa, che promuove l'attaccamento-sicuro guadagnato (ESA), sembra invece avere un effetto protettivo nel mitigare le alterazioni indotte dal legame compromesso con il caregiver primario. Ciò nonostante, i meccanismi neurobiologici alla base di questo fenomeno non sono ancora chiari.

Metodo:

Nel seguente studio abbiamo prima valutato la relazione tra attaccamento in età precoce e vulnerabilità alla sintomatologia depressiva in un campione non clinico di donne adulte. Successivamente, abbiamo implementato un modello murino di alterazione dell'attaccamento (Repeated Cross Fostering, RCF), introducendo una figura accudente alternativa (Significant Alternative Caregiver, SAC) per mimare l'ESA e valutare i meccanismi coinvolti.

Risultati:

I risultati mostrano che, nelle donne, l'attaccamento sicuro è associato a minore vulnerabilità depressiva. Nel modello murino, la manipolazione RCF induce un fenotipo simil-depressivo ed una alterazione della fisiologia dei neuroni dopaminergici dell'area tegmentale ventrale. La presenza della SAC previene sia il comportamento depressivo che l'alterazione neuronale.

Conclusioni:

Per concludere, l'attaccamento sicuro ha un ruolo protettivo nello sviluppo di vulnerabilità alla depressione e l'utilizzo del modello murino di ESA rappresenta un valido strumento per indagare i meccanismi neurobiologici dell'attaccamento sicuro guadagnato.

If you're submitting a symposium talk, what's the symposium title?:

Interazione Geni x Ambiente: le potenzialità del modello preclinico

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

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Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali / 718

Stili di guida: confronto tra misure auto-riferite e prestazioni di guida con simulatori a gradi diversi di fedeltà

Authors: Mariaelena Tagliabue¹; Michael Ferrarese²

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Introduzione: La misurazione dello stile di guida è un elemento determinante nell'ambito degli studi sulla sicurezza stradale, poiché permette di individuare gruppi di conducenti a rischio a cui indirizzare specifici programmi di intervento. Il presente studio è focalizzato sull'indagine delle relazioni tra comportamenti di guida aberranti e rischiosi auto-riferiti, da un lato, e prestazioni di guida simulata, dall'altro.

Metodo: Le misure auto-ferite sono state raccolte attraverso il Driver Behavior Questionnaire (DBQ) e il Dula Dangerous Driving Index (DDDI). Le prestazioni di guida simulata sono state osservate attraverso un simulatore di guida a bassa fedeltà, l'Honda Riding Trainer (HRT), e un simulatore di guida ad alta fedeltà, il simulatore Lander. L'obiettivo era di verificare la coerenza delle misurazioni così ottenute. Il campione era costituito da 85 partecipanti tra i 19 e i 32 anni (M=24).

Risultati: I risultati mostrano relazioni robuste e positive tra gli stili di guida rilevati con i questionari e relazioni moderate e positive tra le variabili cinematiche di guida. Inoltre, il simulatore HRT sembra rilevare principalmente comportamenti aberranti mentre il simulatore Lander è più sensibile ai comportamenti rischiosi.

Conclusioni: I risultati suggeriscono che entrambi i simulatori consentono di identificare comportamenti di guida simulati inadeguati, sebbene la fedeltà dei simulatori differisca. La possibilità di disporre di strumenti diversi per l'individuazione degli stili di guida, che mostrano una certa coerenza nelle misurazioni fornite, permette di ampliare la disponibilità di strumenti a disposizione, così da poter impiegare, nei diversi contesti di intervento, quello più adeguato alle necessità.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Sharper minds, Smarter athletes: the Cognitive Side of Sports / 759**The role of sports experience in audiovisual integration: a comparison between rackets players and swimmers****Author:** Simona Perrone¹**Co-authors:** Daniele Romano ²; Luisa Girelli ³¹ *Dipartimento di Psicologia, Università di Milano-Bicocca*² *Università degli Studi di Milano-Bicocca*³ *Università di Milano-Bicocca***Corresponding Author:** s.perrone11@campus.unimib.it

Sports performance requires rapid and accurate reactions to several sensory information. Recent evidence has highlighted the informative role of auditory cues, such as the sound of racket-ball contact in tennis, additionally to visual ones. However, research on audiovisual integration in sports remains limited. Here, we focus on the multisensory integration of auditory and visual information, investigating whether prolonged engagement in sport modulates audiovisual abilities depending on the sport-specific requests. Three groups are compared: racket sport athletes (e.g., tennis players), who consistently make rapid decisions based on combined auditory and visual cues; swimmers, who train in an environment where sensory stimuli are attenuated by water; and a control group of non-athletes. The study employs two psychophysical tasks: the Temporal order judgment task and the Sound-induced double-flash illusion. Results suggest that racket sport athletes' performance reflects more precision than swimmers and controls in perceiving audiovisual stimuli. These findings indicate that sport-specific perceptual demands may refine multisensory abilities.

If you're submitting a symposium talk, what's the symposium title?:

Sharper minds, Smarter athletes: the Cognitive Side of Sports

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative / 965**Tra persistenza e transizione: modelli dinamici a confronto per capire le emozioni nei giovani****Author:** Francesca Borghesi¹**Co-authors:** Gloria Simoncini ²; Pietro Cipresso ³¹ *Dipartimento di Psicologia*² *Dipartimento di Psicologia, Università degli Studi di Torino*³ *Dipartimento di Psicologia, Università di Torino***Corresponding Author:** francesca.borghesi@unito.it

Le fluttuazioni emotive rappresentano un indicatore chiave della flessibilità affettiva; tuttavia i metodi statistici che le modellano possono privilegiare aspetti diversi del processo temporale. In questo

studio analizziamo dati Experience Sampling raccolti in contesto ecologico: per sette giorni i partecipanti hanno compilato otto volte al giorno –per un totale di circa ottocento rilevazioni –un questionario comprendente il Positive and Negative Affect Schedule, domande sulla regolazione emotiva e le coordinate valenza-arousal del modello di Russell.

Abbiamo confrontato due approcci analitici spesso applicati ma raramente messi in relazione diretta: il Dynamic Structural Equation Modeling (DSEM) e la Discrete-Time Discrete-Space Markov Chain (DT-DSMC). Il DSEM, attraverso parametri autoregressivi multilivello, quantifica l'inerzia emotiva e le covariazioni simultanee; la DT-DSMC, modellando le probabilità di transizione tra stati discreti, descrive i percorsi di cambiamento affettivo.

I risultati mostrano che, a fronte di prestazioni predittive sovrapponibili, i modelli DSEM sono più informativi nel cogliere la persistenza autoregressiva degli stati, mentre le catene di Markov restituiscono una rappresentazione più dettagliata degli aspetti transitivi fra emozioni diverse. La scelta del modello orienta quindi le inferenze teoriche: DSEM illumina la stabilità, DT-DSMC la direzionalità del passaggio da uno stato all'altro.

Integrare i due framework offre una descrizione più ricca delle dinamiche affettive e indicazioni per potenziare la regolazione emotionale e la resilienza nelle popolazioni giovanili. La combinazione di inerzia e transizioni permette di delineare profili di flessibilità emotiva per lo screening precoce e la progettazione di training di regolazione. Questi risultati incoraggiano future indagini longitudinali, integrando marker fisiologici.

If you're submitting a symposium talk, what's the symposium title?:

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative (Chair: Alice Chirico)

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders / 593

Linking resting-state gamma activity to associative memory: a potential biomarker for cognitive aging and Alzheimer's Disease

Authors: Valerio Manippa^{None}; Giorgia Francesca Scaramuzzi¹; Gaetano Scianatico²; Ester Cornacchia^{None}; Aurora Bonvino³; Daphne Gasparre⁴; Davide Rivolta²; Paolo Taurisano⁵

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Associative memory is often impaired from the early stages of Alzheimer's Disease (AD). Gamma band (30–120 Hz) brain oscillations are crucial for cognitive functions like multisensory integration and memory consolidation. This study investigates whether resting-state EEG (rsEEG) spectral power can predict associative memory performance, potentially serving as an early biomarker for memory decline in AD.

RsEEG recordings were obtained from 48 young adults who completed a face-name association test (FNAT), assessing immediate (IR) and delayed recall (DR) of cross-modal associative memory.

Slow-gamma (30–49 Hz) power significantly predicted DR performance, explaining 22% of the variance ($p = .024$), with increased power in temporal regions correlating positively with memory ($p = .038$). Fast-gamma (51–100 Hz) power explained 27% of the variance in DR ($p = .006$), with higher frontal ($p = .045$) and lower posterior ($p < .001$) activity linked to better outcomes. For IR, a trend emerged where increased temporal and reduced posterior fast-gamma power corresponded with improved recall.

Higher temporal slow-gamma power supports the role of the temporal lobe in memory processes, aligning with findings of reduced gamma activity in this region in AD. Elevated frontal fast-gamma activity may reflect greater involvement of executive functions in memory retrieval, while reduced posterior fast-gamma may signal a shift from sensory to higher-order processing—patterns often disrupted in AD. These results highlight specific gamma-band signatures as potential early indicators of associative memory decline, offering insights for early detection and monitoring of AD-related cognitive changes.

If you're submitting a symposium talk, what's the symposium title?:

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Interazione Geni x Ambiente: le potenzialità del modello preclinico / 908

Uomini e topi: un modello traslazionale per indagare la depressione indotta da esperienze avverse precoci

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Introduzione. L'esposizione ad esperienze avverse precoci (ELA), come l'alterazione del legame di attaccamento e gli eventi traumatici, rappresenta uno dei principali fattori di rischio per lo sviluppo di depressione in età adulta. Tuttavia, la forte co-occorrenza di queste esperienze rende difficile distinguerne il ruolo specifico. Attraverso un approccio traslazionale, indagheremo il ruolo differenziale di questi fattori per comprenderne i meccanismi neurobiologici sfruttando modelli preclinici di ELA.

Metodi. Nel campione subclinico, tramite il questionario ELAX, abbiamo valutato il ruolo di differenti esperienze precoci e la presenza di vulnerabilità ai sintomi depressivi. Parallelamente, l'utilizzo di due manipolazioni precoci, che inducono depressione nel modello murino, ci ha permesso di mimare l'alterazione del legame di attaccamento (Repeated Cross Fostering, RCF) ed il neglect (Scarcity). Gli animali sono stati poi testati per valutare il fenotipo simil-depressivo e sono state condotte analisi neurobiologiche per evidenziare i meccanismi che sottendono la depressione indotta da diverse ELA.

Risultati. I nostri dati suggeriscono esiti depressivi differenti associati all'alterazione del legame di attaccamento e alle esperienze traumatiche, sia nell'uomo che nel modello murino. In particolare, nel campione subclinico osserviamo come la severità dei sintomi depressivi aumenti in base alle ELA. Nel modello murino, i risultati mostrano che sintomi depressivi associati alla compromissione sociale sono maggiormente legati al neglect, mentre il coping passivo è indotto in misura maggiore dall'alterazione del legame di attaccamento.

Conclusioni. In conclusione, l'alterazione del legame di attaccamento e le esperienze traumatiche influenzano in modo differenziale le traiettorie di sviluppo, favorendo sintomi depressivi distinti in età adulta.

If you're submitting a symposium talk, what's the symposium title?:

Interazione Geni x Ambiente: le potenzialità del modello preclinico

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali / 657

“Head on the Road, Mind Elsewhere”: How Susceptibility to Distractions Impacts Driving

Authors: Sergio Traficante¹; Luigi Tinella²; Antonella Lopez³; Andrea Bosco⁴; Alessandro Oronzo Caffò⁵

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Tra i fattori che influenzano gli incidenti stradali, la guida distratta emerge come una delle cause più significative. Il progetto, attraverso un continuum di tre studi, mira a comprendere in che modo la suscettibilità alla distrazione possa influire sul comportamento alla guida. Studio I: revisione sistematica della letteratura, seguendo le linee guida PRISMA, per identificare i fattori che influenzano il Mind Wandering alla guida. La revisione ha individuato tre fattori principali: fattori umani, fattori ambientali e fattori legati al veicolo. Studio II: validazione psicometrica mediante analisi fattoriali (EFA e CFA) di uno strumento in grado di individuare diverse tipologie di distrazione alla guida, basate su un modello di esperienza cosciente. Lo strumento presenta una configurazione a 4 fattori, con buoni indici di adattamento (CFI=.92; TLI=.91; RMSEA=.04; SRMR=.05). Studio III: analisi dell'impatto del carico percettivo e della suscettibilità alla distrazione su prestazioni di guida simulata, ovvero velocità, posizione laterale e angolo di sterzata. È stata effettuata un'ANOVA a fattori misti, con il tempo (3, 6, 9 minuti) e il carico percettivo (alto/basso) come fattori ripetuti. Il genere (maschi/femmine) e la suscettibilità alla distrazione (alta/bassa) sono stati utilizzati come fattori di gruppo. Dai risultati sono emerse interazioni significative tra il carico percettivo, il tempo e il genere, con differenze crescenti nel tempo tra i gruppi per tutti e tre gli outcome investigati. Questi risultati evidenziano l'importanza di considerare sia le differenze individuali che i fattori ambientali per comprendere la distrazione nelle prestazioni di guida.

If you're submitting a symposium talk, what's the symposium title?:

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Sharper minds, Smarter athletes: the Cognitive Side of Sports / 789

Beyond the Hit: The Invisible Echo of Concussion in Sports

Author: Irene Leo¹

Co-authors: Valentina Tomaselli²; Francesca Argirò¹; Marco Lunghi¹; Veronica Baiocco³; Alessandra Simonelli¹; Silvia Bressan⁴

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Sports-related concussion (SRC) is a traumatic brain injury induced by biomechanical forces, typically resulting from direct impacts to the head, face, or neck. Although the associated neurological impairment is often transient, in some cases symptoms can evolve over minutes or hours and become chronic, developing into post-concussive syndrome. SRCs manifest with somatic symptoms (e.g., headache), cognitive symptoms (e.g., confusion), and emotional symptoms (e.g., irritability, anxiety, depression). Therefore, a comprehensive clinical evaluation, including mood monitoring, is essential to ensure appropriate psychological support and safe reintegration into daily, academic, and athletic activities.

This presentation will provide practical guidelines for distinguishing acute SRC from other traumatic brain injuries, such as mild traumatic brain injury (mTBI), and will review key studies on post-concussive symptoms, with particular focus on depression.

Preliminary findings will also be presented from a newly established multidisciplinary outpatient service dedicated to the management of children, adolescents, and adults with sports-related concussions. This service, developed through the collaboration between the Sports Medicine Service of the Department of Medicine and the Department of Developmental and Social Psychology at the University of Padua, enables early diagnosis and integrated management of often overlooked disorders. It offers a coordinated response to patients' healthcare needs, promoting faster physical and psychological recovery and facilitating a safe return to school, work, and sports activities.

If you're submitting a symposium talk, what's the symposium title?:

Sharper minds, Smarter athletes: the Cognitive Side of Sports

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative / 970

Mappare le emozioni nel Parkinson: un'analisi scientometrica della letteratura

Author: Elisa Pedrolì^{None}

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Abbiamo condotto un'analisi scientometrica per mappare la produzione scientifica internazionale sul tema delle emozioni nella malattia di Parkinson. La scientometria è una metodologia quantitativa che consente di esplorare e visualizzare la struttura della letteratura scientifica, individuando autori influenti, collaborazioni e temi emergenti.

La ricerca è stata effettuata sulla piattaforma Web of Science Core Collection utilizzando la stringa: parkinAND emotion nel campo Topic, che include titolo, abstract e parole chiave. Sono stati identificati 3.214 articoli, successivamente analizzati attraverso strumenti bibliometrici.

I documenti appartengono principalmente alla categoria Neurosciences. Abbiamo applicato due approcci principali: l'analisi di co-citazione e l'analisi di co-occorrenza delle parole chiave. La co-citation analysis ha evidenziato un nucleo teorico solido incentrato su studi neurologici e psicologici

legati alla regolazione emotiva nei pazienti con Parkinson.

L'analisi delle co-occorrenze ha rivelato tre cluster tematici principali: (1) un cluster neurofisiologico legato a "dopamine", "basal ganglia" ed "emotion recognition"; (2) un cluster clinico con termini come "non-motor symptoms", "facial masking" e "quality of life"; (3) un cluster terapeutico che include "deep brain stimulation" e "rehabilitation".

Questi risultati forniscono una visione integrata e sistematica della letteratura, utile per orientare future ricerche teoriche e applicative sul rapporto tra emozione e Parkinson.

If you're submitting a symposium talk, what's the symposium title?:

Esplorare le emozioni tra reale, artificiale e virtuale: nuove prospettive metodologiche e applicative
(Chair: Alice Chirico)

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders / 774

Oscillatory signatures of healthy vs. unhealthy aging

Author: Vincenzo Romei¹

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Aging is a lifelong process encompassing time-sensitive trajectories leading to different degrees of healthy-/unhealthy-aging. Executive functions, including perceptual processing, cognitive control and motor action, as well as their plasticity, are heavily modulated by such trajectories.

Within the realm of perceptual processes, predictive coding theory posits that perception is a decision-making process which relies on the brain's ability to anticipate sensory inputs based on prior experience, dynamically integrating top-down expectations with bottom-up sensory evidence. Such mechanisms rely on oscillatory modulation in posterior alpha band amplitude concerning prior exploitation, frontoparietal theta connectivity exploiting cognitive control over sensory input and motor beta modulation, exploiting response preparation.

However, it remains unclear how the prior-knowledge/sensory-input balance changes with age and whether aging leads to systematic re-weightings of perceptual inference expectations.

Here I show how aging influences prior integration during perceptual decision-making. Older adults exhibit greater reliance on prior expectations, reflected by increased response bias and reduced perceptual sensitivity. Neurophysiological analyses reveal alterations in oscillatory activity across sensory, motor, and executive domains. Specifically, older adults show reduced alpha modulation, increased beta desynchronization, and reduced theta fronto-parietal connectivity. These findings suggest that aging leads to neurocognitive reorganization, characterized by increased reliance on prior expectations and reduced flexibility in integrating sensory information. Moreover, they show reduced learning abilities of implicit priors, speaking for reduced plasticity.

Importantly, chronological age does not fully account for this trajectory. Instead, interindividual differences in cognitive style mediate these changes, with the use of flexible context-dependent strategies providing the most effective healthy-aging strategy.

If you're submitting a symposium talk, what's the symposium title?:

"Typical and Atypical" Aging: From Cognitive Aging to Neurocognitive Disorders

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicologia del comportamento di guida: traiettorie cognitive, morali e comportamentali / 1025

Discussione finale

Sharper minds, Smarter athletes: the Cognitive Side of Sports / 1026

Discussione generale

Corresponding Authors: luisa.girelli@unimib.it, valenti.bianco@unipv.it

Interazione Geni x Ambiente: le potenzialità del modello preclinico / 1015

Discussione generale

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali / 847

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali

Authors: Francesca Cantoni¹; Eleonora Fullone²; Giorgio Lazzari³; Federico Curzel³; Francesco De Benedetto⁴

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La musica, stimolo universale e gratificante, coinvolge processi cognitivi, affettivi e sociali, grazie anche alla sua componente ritmica. Questo simposio, presentato da cinque giovani ricercatrici e ricercatori provenienti da università italiane e internazionali, esplora come ritmo e piacere musicale influenzino percezione, emozione e interazione sociale. I contributi offrono una prospettiva integrata nell'ambito della psicologia sperimentale, spaziando dall'approccio evolutivo, alle differenze individuali, fino all'analisi delle dinamiche interpersonali. Il simposio si apre con un focus evolutivo, presentando una nuova versione per bambini del Beat Alignment Test, validata per misurare le abilità ritmiche precoci, fondamentali per lo sviluppo cognitivo e spesso alterate nei disturbi del neurosviluppo (TALK 1). Si prosegue con l'esplorazione di come la sensibilità individuale al piacere musicale si associ a migliori capacità ritmiche negli adulti, evidenziando anche l'interazione tra complessità ritmica e percezione del piacere (TALK 2). A livello interpersonale, viene mostrato come il piacere musicale migliori la sincronizzazione motoria tra partner, soprattutto con stimoli consonanti (TALK 3). Inoltre, lo studio della sincronizzazione neurale interpersonale rivela come una maggiore somiglianza nel piacere musicale percepito tra due individui si traduca in una sincronizzazione più forte nella corteccia prefrontale, rilevata tramite hyperscanning (TALK 4). Infine, viene esplorato come il piacere musicale influisca sulla percezione del tempo, suggerendo un'interazione con i meccanismi attentivi che modula la nostra esperienza temporale (TALK 5). Nel complesso, i risultati suggeriscono il potenziale della musica come strumento per esplorare e modulare dinamiche cognitive, affettive e sociali, con importanti implicazioni per interventi clinici e di prevenzione.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics / 605

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics

Authors: Marcella Brunetti¹; Massimo Bertoli²

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² *Università G. d'Annunzio di Chieti-Pescara*

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Climate change represents not only an environmental crisis but also a psychological and cognitive challenge. The interplay between environmental, psychological, and neurocognitive factors makes information processing complex, interfering with affective engagement, planning, and the adoption of sustainable behaviors. Moreover, cognitive biases and intense emotional responses—such as eco-anxiety—suggest a difficulty in adaptation that calls for specific psycho-cognitive resources.

This symposium will explore, from an interdisciplinary perspective, the processing of environmental variables in the context of climate change, with a particular focus on the restorative potential of nature as a resource for emotional regulation and well-being promotion.

A theoretical framework will be proposed that highlights key features of the current climate crisis, particularly its temporal dimension and the role of cognition in mediating emotional involvement and behavioral strategies implementation. From this perspective, interaction with natural environments will be considered a potential tool for psycho-cognitive regulation.

Experimental contributions will investigate the restorative role of nature and biophilic design in everyday and workplace settings. Further presentations will analyze the effects of nature-based solutions in fostering urban resilience and psychological well-being, through participatory urban design and environmental education initiatives aimed at strengthening environmental awareness in young populations—with implications for adaptive capacity development in future generations. Finally, empirical data will be presented on the effects of natural environments on psychological constructs such as sense of self and agency.

The symposium aims to outline an integrated framework of the psycho-cognitive dynamics underlying climate awareness, proposing nature interaction as a path to fostering both individual and collective resilience.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovations in psychometric modelling: New approaches to understanding psychological measurement / 728

To aggregate or not to aggregate: Effect-variant measurement models and their advantages

Author: Giorgia Tosi¹

Co-authors: Daniele Romano²; Marcello Gallucci³

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In psychological research, measurement models often aggregate items under the assumption that the effects of other variables remain consistent across those items (i.e., effect invariance). This assumption can lead to biased statistical conclusions, particularly by producing a positive bias in the F-test and inflating the Type I error rate, since it overlooks the random variability in item-specific effects.

This study advocates for adopting effect-variant models, which treat both participants and items as random factors, and demonstrates when these models are more suitable than traditional aggregation methods. We further develop this argument by introducing the Aggregation Bias Index (ABI), a new metric to quantify the bias associated with standard aggregation approaches.

Through a series of simulations and analyses of real experimental data, we show that ignoring item-specific variability in aggregated models leads to lower accuracy in detecting the condition effect and increases Type I error rates, especially in larger samples. The ABI provides an effective way to assess the extent of this bias.

These results emphasise the importance of using effect-variant models and accounting for random variability in both items and participants, ultimately enhancing the validity of statistical inferences in psychological research involving questionnaires and scales.

If you're submitting a symposium talk, what's the symposium title?:

Innovations in psychometric modelling: New approaches to understanding psychological measurement

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience / 742

Individual Differences in Salience Attribution: Neural Correlates of Sign- and Goal-Tracking in Human

Author: Nicola Sambuco¹

Co-authors: Antonella Lupo¹; Roberta Passiatore²; Pierluigi Selvaggi¹; Linda A. Antonucci¹; Alessandro Bertolino¹; Giuseppe Blasi¹; Daniela Grasso³; Alessandra Raio¹; Antonio Rampino¹; Giulio Pergola²

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Background. Aberrant reward processing plays a central role in several psychiatric disorders. The Sign-Tracker/Goal-Tracker (ST/GT) model, developed in rodent research, distinguishes individuals who attribute incentive salience to reward-predictive cues (ST) from those who focus on the reward itself (GT). We translated this model to humans using functional MRI (fMRI) and investigated its neural correlates across large independent cohorts. Additionally, we examined ST/GT profiles in relation to personality and cognitive functions.

Methods. fMRI data were collected from 1,135 healthy participants across two cohorts: Discovery (n=890, 436M/454F, age=22.1) and Replication (n=245, 104M/141F, age=25.7), each performing a variant of the Monetary Incentive Delay (MID) task. This task probes reward anticipation and outcome processing without involving learning. We applied hierarchical k-means clustering to BOLD signal responses from reward-related brain regions to identify ST and GT profiles and assess their replicability across samples.

Results. ST exhibited greater BOLD activation during reward anticipation, while GT showed higher activation during outcome. The clustering solution was robust across cohorts (84.9% classification accuracy in Discovery, 78.7% in Replication). Trial-level analyses confirmed that ST consistently assigned incentive salience to cues ($p = 0.005$). No significant differences in personality traits were found, but ST showed greater reward sensitivity in a passive avoidance learning task and higher executive function scores (both pFDRs $< .05$).

Conclusions. ST/GT profiling based on fMRI reveals stable interindividual differences in reward-related brain function. These findings offer a mechanistic framework for characterizing salience attribution processes and may inform future research into psychiatric conditions marked by dysfunctional reward processing.

If you're submitting a symposium talk, what's the symposium title?:

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovations in psychometric modelling: New approaches to understanding psychological measurement / 726

Innovations in psychometric modelling: New approaches to understanding psychological measurement

Author: Giorgia Tosi¹

¹ *University of Milan-Bicocca*

Corresponding Author: giorgia.tosi@unimib.it

This symposium highlights innovative approaches to psychometric modelling aimed at advancing the assessment and understanding of psychological constructs. The four contributions showcase diverse methodologies that go beyond traditional frameworks to better capture the complexity of human behaviour and measurement.

The first presentation evaluates the use of Exploratory Graph Analysis (EGA) to assess discriminant validity, demonstrating the utility of network psychometrics as an alternative to Structural Equation Modelling (SEM). The second applies generalised linear mixed-effects models to derive Rasch-like parametrisation of both accuracy and response time data in cognitive and social psychology experiments, offering a novel approach to modelling individual differences in psychological measures. The third explores the application of effect-variant models, which treat both participants and items as random factors, to questionnaire data, emphasising their capacity to account for respondent and item-level variability in a flexible, multilevel structure. The fourth contribution presents the development of a digital assessment tool to evaluate both mathematical competence and emotional responses to mathematics. The tool's psychometric properties are analysed using the two-parameter logistic

(2PL) model within the Item Response Theory (IRT) framework, allowing for nuanced evaluation of item difficulty and discrimination parameters across cognitive and affective dimensions.

Together, these contributions reflect a shared commitment to methodological innovation in psychometrics, illustrating how modern statistical techniques can enhance psychological measurement's precision, interpretability, and scope.

If you're submitting a symposium talk, what's the symposium title?:

Innovations in psychometric modelling: New approaches to understanding psychological measurement

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni / 705

Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni

Author: Gabriele Filomena¹

Co-author: Donato Liloia²

¹ *University of Liverpool*

² *Università di Torino, Dipartimento di Psicologia*

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La ricerca sulla navigazione negli spazi urbani dal 1960 in avanti ha tentato di comprendere come le persone formulino dei percorsi per raggiungere le loro destinazioni nello spazio urbano, di come memorizzino e ottimizzino tali percorsi, di quali elementi urbani si servano e come imparino a muoversi in ambienti inediti. Inizialmente, questo interesse è emerso dall'incontro tra la geografia e la psicologia e si è concentrato sulla formulazione di contributi teorici sulle rappresentazioni mentali che supportano questi processi. La ricerca in geografia comportamentale e quella cognitiva ha identificato una serie di processi che descrivono la relazione tra le strutture interne (mappe cognitive) e quelle esterne (la forma dello spazio urbano), e l'emergenza di complessi comportamenti spaziali.

Questo simposio prevede una serie di interventi finalizzati a presentare recenti evidenze sperimentali che dimostrano il potenziale valore applicativo e teorico di approcci multidisciplinari nella ricerca sulla navigazione urbana, con particolare riferimento a lavori nelle neuroscienze, neuropsicologia, e all'integrazione di tali evidenze empiriche in modelli computazionali del comportamento di navigazione. Saranno presentati nuovi dati, analisi all'avanguardia e sintesi critica della letteratura del settore, con l'obiettivo di approfondire la nostra comprensione dei complessi processi alla base della navigazione spaziale in ambienti urbani. Ogni intervento sarà condotto da un ricercatore junior, con comprovata esperienza e pubblicazioni peer-reviewed nel campo della psicologia sperimentale e ambientale. Il simposio tratterà l'uso delle neuroimmagini, il training di navigazione, l'uso strategico del GPS, i fattori individuali e i modelli ad agenti per la simulazione dei movimenti nello spazio urbano.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience / 816

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience

Author: Giada Lettieri^{None}

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Understanding how emotions and motivational states emerge from the dynamic interplay between brain activity, physiological signals, and interoceptive processes is a central challenge in affective neuroscience. Integrating evidence from functional neuroimaging, psychophysiology, interoception, and virtual reality interventions, this symposium illustrates how central and peripheral physiological systems jointly contribute to affective experience and its dysregulation in psychopathology. One contribution adopts a translational perspective on reward processing, identifying individual differences in salience attribution using the Sign-Tracker/Goal-Tracker framework. Large-scale fMRI data reveal distinct patterns of neural activation during reward anticipation versus outcome, providing a mechanistic account of motivational variability.

Another study explores the therapeutic potential of immersive virtual reality for individuals with depressive symptoms. Two innovative interventions -heart rate variability biofeedback and a novel time-perception recalibration paradigm- demonstrate how targeting autonomic and cognitive processes may promote psychological wellbeing.

The affective power of interoceptive signals is further examined through research on aesthetic chills, where increased heart rate is shown to correlate with emotional complexity, particularly during ambivalent emotional states. This work highlights how transient physiological responses reflect nuanced emotional experiences.

Finally, emerging evidence from visceral psychophysiology reveals that fluctuations in gastric pH and temperature are associated with specific emotional states, such as fear and disgust. These findings support the growing view that gut-brain interactions are integral to affective processing.

Together, these studies advance our understanding of embodied emotion and motivation, offering interdisciplinary insights with implications for both affective science and clinical applications.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali / 821

I musicisti suonano bene insieme a tempo? Un nuovo Beat Alignment Test per valutare le abilità ritmiche nei bambini

Author: Francesca Cantoni¹

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La percezione ritmica è importante sia nella musica che nel linguaggio, e i bambini con disturbi del neurosviluppo mostrano pattern ritmici atipici. Tuttavia, gli strumenti esistenti per valutare le abilità ritmiche sono spesso pensati per adulti, rendendo necessario sviluppare test più adatti ai bambini.

Abbiamo ideato una versione per bambini del Beat Alignment Test (BAT), test di riferimento per la valutazione della percezione del beat, utilizzando estratti musicali in stile pop con una gran cassa che suona la pulsazione. Sono state create tre versioni degli estratti: con la cassa suonata a tempo, anticipata o posticipata rispetto al beat. I partecipanti (N=42, 8 anni) dovevano giudicare se i musicisti suonavano bene insieme a tempo. I risultati confermano la fattibilità e la brevità del compito (~6 minuti), con prestazioni che correlano con quelle del BAT originale. Per esplorare il legame tra ritmo e linguaggio, i partecipanti hanno completato un test di lettura. Sebbene non sia emersa una correlazione diretta tra abilità ritmiche e linguistiche, i risultati potrebbero risentire di variabili non esplorate, come la produzione ritmica, e del range limitato di età testato. Per questo motivo, stiamo ora includendo un compito di sincronizzazione sensori-motoria ed estenderemo i test ai bambini di 5-7 anni. Parallelamente, stiamo sviluppando una versione per bambini dell'extended Barcelona Music Reward Questionnaire, per esplorare il legame tra reward musicale e abilità ritmiche. Questo lavoro sottolinea l'importanza di considerare le varie fasi di sviluppo nella valutazione delle competenze ritmiche, aprendo nuove prospettive di ricerca e intervento.

If you're submitting a symposium talk, what's the symposium title?:

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics / 1030

Overview

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Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni / 1033

Introduzione

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Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni / 703

Correlati Neuropsicologici della Navigazione Spaziale in Contesti Urbani: Una Ricerca Meta-Analitica di Studi di Neuroimmagine Funzionale

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INTRODUZIONE: Negli ultimi tre decenni, le neuroscienze cognitive hanno esaminato la capacità dell'essere umano di orientarsi in ambienti urbani, analizzando i processi cognitivi e cerebrali che sono alla base di una navigazione spaziale efficace. Numerosi studi hanno utilizzato metodiche di neuroimmagine funzionale, capaci di identificare il coinvolgimento di una rete di strutture cerebrali in diversi contesti di navigazione urbana. Tuttavia, le evidenze attuali mostrano una significativa variabilità in termini di risultati, possibilmente dovuta alle differenti strategie di navigazione che utilizzano informazioni dalla prospettiva del percorso (route-based) o quella globale (survey-based). Inoltre, differenze legate al sesso, all'età e ad aspetti metodologici restano ancora inesplorate. **METODI:** Abbiamo condotto una meta-analisi di neuroimmagine per identificare la presenza di una rete cerebrale alla base dell'elaborazione spaziale in ambiente urbano, nonché esaminare le potenziali somiglianze e differenze tra le strategie di navigazione utilizzate negli studi fMRI e PET pubblicati. Abbiamo anche condotto analisi di meta-regressione al fine di valutare l'impatto di diverse variabili, tra cui l'età e il sesso, sui risultati identificati. **RISULTATI:** L'analisi guidata dai dati ha rivelato uno schema di attivazione consistente tra 26 esperimenti selezionati a livello paraippocampale, occipitale, parietale, frontale e cerebellare. Tuttavia, diverse differenze sono emerse negli schemi di attivazione reclutati durante le strategie di navigazione route-based e survey-based. Non sono state trovate associazioni lineari significative in relazione alle variabili d'interesse. **CONCLUSIONI:** Questa ricerca ha rivelato la rappresentazione cerebrale della navigazione spaziale in ambienti urbani, suggerendo che diverse parti di questa rete sono coinvolte in modalità di navigazione specifiche.

If you're submitting a symposium talk, what's the symposium title?:

Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics / 761

Towards Healthier Minds and Cities: Insights from Environmental Education, Emotion Regulation, and Urban Park Design

Author: Marino Bonaiuto¹

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Numerous studies emphasize the value of integrating nature in everyday life to support cognitive and emotional functioning, enhance psychological well-being, and promote sustainable development. Three lines of research –aiming at fostering healthier individuals and more environmentally conscious communities –are presented.

The first research explores how nature exposure aids emotion regulation following negative mood induction, through two experimental studies. In the first study (within-subjects), participants viewed videos of different environments. A serial mediation revealed that nature videos improved emotional outcomes via perceived restorativeness and adaptive strategies. In the second study (mixed design), VR scenarios were used to assess five environments. While emotion regulation strategies did not mediate effects, the perceived suitability of a location for down-regulation significantly influenced emotional recovery.

The second research, developed with national stakeholders (e.g., Assoverde and Confagricoltura), identifies key indicators for healthy urban parks (presence of blue elements, floral coverage, chromatic diversity, and faunal biodiversity). By using AI-generated images, each indicator's impact

on dependent variables (e.g., emotional reactions, restorativeness, and attractiveness) was tested. Findings support a framework for certifying “Health Parks” based on evidence-based psychological benefit.

The third research (e.g., PRIN 2022) examines effects of outdoor environmental education on Italian secondary school students from different regions. Results suggest that participation improves environmental knowledge, identity, and well-being indicators compared to a control group, with positive changes observed post-intervention across multiple psychological domains.

Taken together, these lines highlight the importance of (virtual and real) nature exposure in promoting emotional resilience, environmental knowledge and beliefs, and sustainability attitudes.

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Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics - id #605.

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Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali / 851

Il Piacere del Ritmo: l'Impatto della Sensibilità alla Ricompensa Musicale e della Complessità dello Stimolo sull'Elaborazione del Ritmo

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Il ritmo è una componente centrale della musica, coinvolta in processi cognitivi e affettivi, ed è strettamente legato al piacere musicale grazie alla sua capacità di indurre movimento. Studi precedenti hanno mostrato che il piacere musicale è massimo per ritmi di complessità intermedia, che favoriscono anche le abilità di sincronizzazione in compiti di tapping. Tuttavia, non è chiaro come la sensibilità individuale al piacere musicale (edonia musicale) influenzi le abilità ritmiche e la percezione del ritmo in relazione alla complessità. Per esplorare questi aspetti, abbiamo condotto due studi su non musicisti. Nel primo (N=121), i partecipanti hanno completato tre compiti (produzione, percezione e memoria) per valutare le abilità ritmiche, e l'*extended Barcelona Music Reward Questionnaire* (eBMRQ) per misurare l'edonia musicale. I risultati mostrano che chi ha maggiore sensibilità al piacere musicale tende ad avere una maggiore sensibilità nei compiti di produzione e percezione ritmica. Nel secondo studio (N=154), i partecipanti hanno completato un compito di percezione ritmica (CA-BAT), valutando anche il piacere provato per ciascuna sequenza musicale. Grazie al calcolo della complessità ritmica attraverso un'analisi di entropia, i risultati mostrano che livelli intermedi di complessità ritmica sono associati a un maggiore piacere e predicono la percezione ritmica, con livelli intermedi di entropia che rendono i partecipanti più propensi a percepire gli stimoli come regolari. Questo effetto è più pronunciato nei partecipanti che riportano valutazioni di piacere più elevate.

In sintesi, i risultati suggeriscono un'interazione tra ricompensa musicale e ritmo, con l'edonia musicale che modula abilità ritmiche e percezione ritmica.

If you're submitting a symposium talk, what's the symposium title?:

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali

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Yes

Innovations in psychometric modelling: New approaches to understanding psychological measurement / 600

Rasch 2.0: A Linear Mixed-Effects Models approach to obtain Rasch-like estimates of accuracies and response times from fully-crossed design data

Author: Ottavia Epifania¹

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¹ *Università di Trento*

² *Università di Padova*

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The Rasch model is a widely used psychometric model that enables the direct comparison between item properties and respondent characteristics. However, its strict assumptions can limit its applicability in experimental psychology. Given its mathematical equivalence to the inverse logit link function in generalized linear models (GLMs) for binomially distributed response variables, Rasch-like parametrizations can be derived through a GLM approach. This contribution illustrates how (generalized) linear mixed-effects models can be used to obtain Rasch-like parametrization of both accuracy and response time data in two typical experiments with fully-crossed structures from cognitive and social psychology. The modelling framework accounts for the variability at multiple levels (i.e., respondents, stimuli, experimental conditions), allowing for more robust inferences than traditional scoring methods. Furthermore, it provides stimulus-level information that can reveal new aspects of the functioning of the experiments. The approach yields meaningful insights across different aims, from detecting group-level effects (e.g., the SNARC effect in cognitive psychology) to individual differences (i.e., the implicit association test in social psychology).

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Innovations in psychometric modelling: New approaches to understanding psychological measurement

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No

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience / 814

Changes in heart rate to aesthetic chills predict emotional complexity

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Understanding how bodily signals contribute to the experience of complex emotions is central to models of embodied affective processing. Aesthetic chills -brief, intense physiological reactions often triggered by emotionally salient media- provide a unique window into peak affective states and their underlying bodily dynamics. While chills have been associated with both unipolar (positive or negative) and mixed emotional experiences, their physiological underpinnings remain underexplored. In this study, we use chills as a marker to investigate how heart rate (HR) relates to emotional intensity and complexity, and how interoceptive cues may shape the subjective experience of mixed affect.

Twenty-six healthy participants (17F, Mage = 28.1 ± 3.7) viewed nine emotionally evocative video clips (e.g., motivational speeches) over approximately one hour while HR was continuously recorded. Participants pressed a button whenever they experienced a chill, rating each in terms of emotional intensity and valence. We compared HR responses during chill-eliciting versus non-chill videos and examined whether mixed affective experiences were associated with distinct autonomic patterns. Participants reported an average of 19 chills, with the majority rated as positively valenced. HR was significantly elevated during chill-inducing stimuli ($p < 0.001$), and notably higher during ambivalent (mixed valence) episodes compared to unipolar ones ($p = 0.027$).

Conclusions. These findings suggest that physiological responses, particularly heart rate, play a key role in shaping emotionally complex experiences. By linking autonomic arousal to mixed affective states, this study contributes to a broader understanding of how body and brain interact in generating rich and nuanced emotional experiences.

If you're submitting a symposium talk, what's the symposium title?:

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni / 751

La navigazione spaziale: una panoramica sul suo sviluppo e sui programmi di potenziamento

Authors: Luca Pullano¹; Santo Di Nuovo²; Francesca Foti²

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La navigazione spaziale è un'abilità cognitiva complessa, cruciale nella vita quotidiana poiché consente agli individui di muoversi efficacemente nell'ambiente. La sua complessità deriva dal fatto che essa si basa sull'integrazione di numerosi stimoli (visivi, uditi, propriocettivi) e molteplici processi cognitivi (percezione, attenzione, memoria, pianificazione, decision-making). Lo sviluppo della navigazione avviene gradualmente durante l'infanzia e prevede dapprima l'utilizzo di strategie navigazionali prevalentemente di tipo egocentrico e, successivamente, di quelle allocentriche. Oltre che dai processi cognitivi implicati, l'espressione della navigazione spaziale è modulata anche da altri fattori - come la familiarità con l'ambiente, il genere, la dimensione emotiva, motivazionale e attitudinale - i quali portano ad un'alta variabilità individuale.

Il presente contributo si propone di affrontare alcuni dei principali temi trattati nella letteratura scientifica sull'argomento. In particolare, sarà approfondito il tema dello sviluppo delle abilità di navigazione, al fine di descrivere le principali tappe evolutive e come queste possano essere favorite attraverso specifici programmi. Inoltre, sarà discusso il tema del potenziamento delle abilità di navigazione poiché, come altre funzioni cognitive, anch'esse possono essere migliorate attraverso specifici training. L'analisi dei training permetterà di evidenziare come questi siano stati implementati sia in ambienti reali che virtuali, con specifici obiettivi in relazione alla fascia di età considerata: nell'infanzia e nell'adolescenza l'obiettivo era quello di promuovere uno sviluppo precoce, negli adulti

di migliorare specifiche abilità di navigazione e negli anziani di preservare il funzionamento cognitivo. Complessivamente, l'intervento metterà in luce l'importanza del buon funzionamento della navigazione per il benessere psicosociale degli individui nell'intero arco di vita.

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Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni

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Yes

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali / 871

Note in armonia, movimenti in sincronia: l'effetto della consonanza musicale sull'azione condivisa

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Fare musica è un'attività universale che consente agli esseri umani di creare insieme suoni piacevoli. Tuttavia, resta poco chiaro come l'estetica di questi suoni influenzi la sincronizzazione dei movimenti tra individui. In questo studio abbiamo utilizzato un paradigma di sincronizzazione interpersonale per indagare se la qualità di un accordo prodotto (consonante vs. dissonante) influenzi la coordinazione tra due persone. Coppie di non musicisti hanno eseguito un compito di sincronizzazione-continuazione: in ogni trial, i partecipanti sincronizzavano il loro tapping con un metronomo (fase di sincronizzazione), e successivamente continuavano a battere a tempo senza referenza (fase di continuazione). Ogni battito produceva una nota, udibile da entrambi i membri della coppia, creando un accordo consonante (quinta giusta o sesta maggiore) o dissonante (seconda minore o seconda maggiore). Dopo ogni trial, i partecipanti valutavano il piacere provato nel creare un suono insieme. Abbiamo inoltre somministrato questionari su vicinanza sociale, ricompensa musicale e formazione musicale. I risultati mostrano maggiore sincronia quando le coppie creavano accordi consonanti (alto piacere) vs. dissonanti (basso piacere), con il piacere percepito predittivo del grado di sincronizzazione tra i partner. Tuttavia, la consonanza non influenza la sincronizzazione individuale con il metronomo. Inoltre, l'effetto della consonanza sulla sincronizzazione era più marcato nelle diadi con un minore senso di vicinanza prima del compito. Nel complesso, questi risultati mettono in luce il ruolo della consonanza nel modellare la coordinazione temporale delle nostre azioni con gli altri. Più in generale, l'effetto estetico di ciò che creiamo insieme influisce sui comportamenti condivisi.

If you're submitting a symposium talk, what's the symposium title?:

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Yes

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics / 755**Environmental effects on technostress and the role of the sense of self: a two-wave longitudinal survey in Italian university students****Author:** Sjoerd Ebisch¹**Co-authors:** Simone Di Plinio ¹; Elisa Menardo ²; Claudia Greco ¹; Margherita Pasini ²; Margherita Brondino ²¹ *G. d'Annunzio University of Chieti-Pescara; Department of Neuroscience, Imaging and Clinical Sciences*² *University of Verona***Corresponding Author:** sjoerd.ebisch@unich.it

This study aims at testing the effect of subjective and objective environmental features on experiences of technostress in university students, and its hypothesized involved psychological mechanisms, in particular the sense of self and agency. N = 1188 students from 22 Italian universities were included. A two-wave data collection procedure was carried out via online surveys comprising two measurement points with an interval between three and six months. Psychometric questionnaires included: Perceived Restorativeness Scale (referring to home), Nature Contact Questionnaire, Connectedness with Nature Scale, Trait Sense of Self Inventory, Pleasure/Arousal/Dominance PAD questionnaire, General Health Questionnaire, and an ad hoc technostress questionnaire. Satellite imagery was employed to extract environmental features from the participants' residential areas. Structural equation modeling was used for data analysis. The results showed that perceived residential restorativeness depends on nature contact, feelings of connectedness with nature and residential percentage grey/green spaces within a radius of 400 meters around one's residence. Increased restorativeness in turn predicted less technostress, which was partly mediated by sense of self and PAD (decreased restorativeness, decreased sense of self and PAD, augmented technostress). Finally, sense of self, PAD and technostress predicted participant's general mental health. Model fit: CFI = .974; TLI = .966; PNFI = .743; RMSEA = [.031 .046]; BIC = 21627; R² GHQ = .605; R² technostress = .082; R² self trait = .059; R² PAD = .248. These findings open a new window in the role of the sense of self and agency in mediating the relationship between environmental variables and mental health, and in particular technostress.

If you're submitting a symposium talk, what's the symposium title?:

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience / 891**Decoding gut feelings: linking gastric activity to perceived emotional experience****Author:** Sofia Ciccarone¹**Co-authors:** Giuseppina Porciello ¹; Arianna Vecchio ²; Vanessa Era ¹; Quentin Moreau ³; Maria Serena Panasiti ¹; Salvatore Maria Aglioti ⁴¹ *1. Department of Psychology, Sapienza University Rome, Rome, Italy; 2. IRCCS Santa Lucia Foundation, Rome, Italy*² *Cognitive Neuroscience Laboratory, Think + Speak Lab, Shirley Ryan AbilityLab, 355 East Erie Street, Chicago, IL 60611, USA*³ *Institut des Sciences Cognitives Marc Jeannerod, Lyon*

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Gastrointestinal (GI) signals have long been hypothesized to contribute to emotional experiences. However, empirical evidence directly linking gastric activity to subjective emotional states remains sparse and inconsistent. In a recent study conducted in our laboratory, an ingestible capsule measuring pH, pressure, and temperature within the GI tract, was used, together with a single-channel electrogastrogram (EGG), to investigate this relationship in male participants observing emotional video-clips. Results demonstrated that changes in stomach pH, but not in gastric myoelectrical rhythm, were associated with increased reports of disgust, fear, and happiness. Expanding upon these findings, we conducted a follow-up study involving both female and male participants, implementing a more sophisticated multi-channel EGG setup and adding electroencephalography (EEG) recordings to provide a more comprehensive assessment of GI and brain activity during emotional processing. Preliminary data from 40 participants indicate that the emotional induction procedure did not significantly modulate gastric frequency. However, stomach pH was significantly more acidic during fearful video-clips compared to happy ones, replicating previous observations. Additionally, stomach temperature decreased during exposure to disgust-inducing stimuli relative to the neutral control condition. To further elucidate the dynamic interaction between gut physiology and neural activity during emotional experiences, we are analyzing EEG data. These findings contribute to a growing body of research suggesting a role of GI signals in emotional experience, highlighting the importance of considering visceral physiology in the study of emotions.

If you're submitting a symposium talk, what's the symposium title?:

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovations in psychometric modelling: New approaches to understanding psychological measurement / 930

Assessing Discriminant Validity in Clinical Psychology: Combining Exploratory Graph Analysis and Structural Equation Modeling

Authors: Anna Panzeri¹; Gioia Bottesi²; Marta Ghisi¹; Giulio Vidotto¹; Andrea Spoto³

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Background: Discriminant validity (DV) is present when two measures of similar, yet distinct constructs exhibit a correlation that is sufficiently low to consider them as distinct. Multiple strategies exist for evaluating DV, but recent recommendations highlighted Structural Equation Modeling (SEM) as a robust approach, although contemporary techniques such as Exploratory Graph Analysis (EGA) also offer significant insights.

Methods: This study combines EGA and SEM in evaluating DV for four instruments whose DV had not previously been established: the Uncertainty in Illness Questionnaire (UIQ), Intolerance of Uncertainty Scale-Revised (IUS), Penn State Worry Questionnaire (PSWQ), and General Anxiety Disorder 7-items (GAD-7), all utilized within the DIPPS project.

Results: First, EGA (1,000 parametric bootstraps) on the items of all four measures successfully identified the underlying dimensions, with all stability indices exceeding 0.85. No problematic EGA cross-loadings emerged, further confirming DV among the scales.

Then, using SEM latent correlations with 95% bootstrapped confidence intervals were estimated freely among the measures, with all values remaining below the threshold of 0.85, thereby supporting the presence of DV (RMSEA= .050, SRMR= .055; CFI= .992; UIQ~IUS = 0.532, 95%CI[0.518, 0.546]; UIQ~PSWQ = .553, 95%CI[.521, .546]; UIQ~GAD-7= .489, 95%CI[.472, .505]; PSWQ~IUS= 0.708, 95%CI[0.696, 0.719]; IUS~GAD-7= 0.561, 95%CI[0.546, 0.577]; PSWQ~GAD-7= .758, 95%CI[.745, .771]).

Conclusions: The preliminary application of EGA to DV assessment produced outcomes consistent with those from confirmatory SEM, suggesting that modern network-based methods represent effective integrations into traditional approaches. This combined performance underscores the potential for contemporary methods to integrate established practices in psychometrics.

If you're submitting a symposium talk, what's the symposium title?:

Innovations in psychometric modelling: New approaches to understanding psychological measurement

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Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni / 793

Modelli computazionali di navigazione urbana: Verso agenti cognitivamente complessi

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Introduzione. I modelli ad agenti (ABM) si sono diffusi per analizzare e comprendere il comportamento umano in diversi ambienti sociali e spaziali. Tuttavia, quando si tratta di modellare l'interazione tra i sistemi umani e l'ambiente urbano, la complessità comportamentale degli agenti risulta limitata. Questo lavoro si propone di arricchire la complessità cognitiva e comportamentale di agenti spaziali (e.g., pedoni) incorporando negli ABM risultati di lavori sperimentali nelle scienze cognitive e la psicologia ambientale. In particolare, discute lo sviluppo di agenti intelligenti che sono a) dotati di capacità rappresentative dell'ambiente e b) in grado di imparare dalle loro esperienze ed espandere la loro conoscenza.

Metodi. Il contributo presenta un ABM che simula il movimento di pedoni in spazi urbani. Il comportamento individuale e aggregato di un gruppo di agenti *semplici* è confrontato con quello di una serie di agenti *complessi*. L'architettura cognitiva degli agenti complessi include delle mappe cognitive sull'ambiente esterno e processi di apprendimento spaziale che permettono loro di modificare adattivamente la loro conoscenza spaziale e il comportamento di navigazione.

Risultati. Le diverse traiettorie comportamentali sono analizzate a livello spazio-temporale. L'inclusione di tale complessità risulta in pattern comportamentali più eterogenei e plausibili, sia a livello spaziale che a livello temporale.

Conclusioni. L'integrazione di mappe cognitive negli ABM spaziali offre una comprensione più sfumata del comportamento spaziale e dell'interazione tra l'uomo e l'ambiente urbano; in aggiunta, questi modelli permettono di osservare come evidenze ottenute in laboratorio o con campioni limitati possano essere generalizzate e, pertanto, di riformulare paradigmi esistenti.

If you're submitting a symposium talk, what's the symposium title?:

Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali / 880**Piacere musicale condiviso e sincronizzazione interpersonale: evidenze comportamentali e neurali da uno studio di hyperscanning fNIRS****Author:** Federico Curzel^{None}**Co-authors:** Barbara Tillmann¹; Arnaud Fournel²; Giacomo Novembre³; Laura Ferreri⁴¹ LEAD CNRS UMR5022, Université Bourgogne Europe, Dijon, France² Université Lumière Lyon 2³ Italian Institute of Technology⁴ Dipartimento di Scienze del Sistema Nervoso e del Comportamento, Università di Pavia**Corresponding Author:** federico.curzel@unipv.it

La musica rappresenta un'importante fonte di piacere, con una straordinaria capacità di evocare emozioni, indurre movimento e favorire la sincronizzazione tra individui. È noto che la musica attiva il sistema dopaminergico mesolimbico e le aree motorie. Tuttavia, i meccanismi che legano il piacere musicale a comportamenti condivisi e sincronizzazione cerebrale restano poco indagati. Il presente studio ha combinato hyperscanning fNIRS e analisi comportamentali su 34 coppie di amici (N = 68; età media = $21,4 \pm 3,6$ anni, non musicisti) seduti uno di fronte all'altro durante un ascolto musicale condiviso. L'attività della corteccia prefrontale è stata registrata mediante due sistemi fNIRS wireless a 22 canali, mentre i movimenti della parte superiore del corpo e le espressioni facciali sono stati videoregistrati. I partecipanti hanno inoltre riportato in tempo reale il piacere provato durante l'ascolto. Le correlazioni tra le valutazioni di piacere all'interno di ciascuna diade sono state calcolate come indice di sincronizzazione affettiva (similarità di piacere). I risultati hanno mostrato che la similarità di piacere era positivamente associata alla frequenza di sorrisi e di movimenti condivisi ($p < 0.001$). A livello neurale, una maggiore similarità di piacere prediceva livelli più elevati di sincronizzazione neurale ($p = 0.014$), evidenziando un legame diretto tra sincronizzazione affettiva e neurale. Questi risultati offrono nuove evidenze sui molteplici livelli di sincronizzazione indotti dalla musica, evidenziando come il piacere condiviso sia associato sia a comportamenti condivisi che alla sincronizzazione neurale interpersonale durante l'ascolto musicale.

If you're submitting a symposium talk, what's the symposium title?:

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics / 868**The RestPod: Promoting Workplace Restoration through Biophilic Design and Physiological Stress Reduction****Authors:** Elisa Menardo¹; Camilla Marossi¹; Margherita Pasini²; Margherita Brondino³¹ Università di Verona² University of Verona, Department of Human Sciences³ Università degli Studi di Verona

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The RestPod is an innovative biophilic micro-environment designed to promote workplace restoration by alleviating cognitive fatigue, reducing stress, and enhancing emotional well-being. Rooted in environmental psychology and biophilic design principles, the RestPod integrates natural elements such as stabilized moss, potted plants, and wood finishes, combined with adjustable warm lighting and airflow controls to enhance user agency and comfort.

This study explored the psychological and physiological restorative potential of the Restpod. The sample was composed of 103 participants (56% female, mean (ds) age = 39.1 (9.6)). They took daily 15-minute breaks in the Restpod over one week. Emotional states were measured before and after each session, while perceived restorativeness (PRS), restorative outcomes (ROS), and burnout levels were assessed at baseline, during, and after the intervention week.

Preliminary results on 43 participants show significant emotional benefits: relaxation increased and stress decreased after sessions ($p < .05$). Participants reported good perceived restorativeness (PRS mean = 3.99/7, SD = 1.85) and good restorative outcomes (ROS mean = 3.39/7, SD = 1.85). Burnout levels decreased by 3% during the intervention week, although this reduction tended to dissipate afterward. Exploratory physiological data supported these findings: heart rate monitoring indicated a mean reduction from 77.0 bpm during work activities to 70.5 bpm during Restpod sessions, highlighting acute physiological stress recovery.

These findings demonstrate the potential of biophilic interventions like the Restpod to foster psychological restoration and physiological stress reduction in workplace environments. Incorporating natural elements and user-centered environmental controls can significantly contribute to healthier, more resilient workplaces.

If you're submitting a symposium talk, what's the symposium title?:

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali / 937

Soundscapes of Time: come la musica influenza la percezione del tempo

Authors: Francesco De Benedetto¹; Carlotta Lega²; Laura Ferreri³

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La percezione del tempo (PT) non è costante, ma è modulata da fattori emotivi e cognitivi. Se da un lato stimoli rewarding influenzano l'orologio interno attraverso meccanismi dopaminergici, dall'altro caratteristiche musicali come ritmo, complessità e preferenza incidono sui giudizi temporali. In questo studio sfruttiamo la musica, uno stimolo rewarding, per esplorare come piacere musicale e complessità ritmica modulino la PT.

33 partecipanti (N atteso 70) hanno ascoltato la loro musica preferita e dei brani sconosciuti, stimato la durata e valutato il piacere evocato. I risultati indicano come l'ascolto della musica abbia portato ad una sottostima generale del tempo (errore medio = -20.8%). In particolare, la differenza tra brani preferiti e non ha mostrato un trend verso un'ulteriore sottostima per la musica preferita ($p = .053$). Analogamente, valutazioni di piacere più alte predicono una sottostima maggiore ($\beta = -.0588$, $p = .031$), rafforzando l'idea che il reward indotto dalla musica possa influire sulla PT.

L'interpretazione è che la sottostima temporale possa essere una conseguenza del fatto che l'ascolto di musica distolga l'attenzione dallo scorrere del tempo. Questi risultati saranno approfonditi in uno studio in cui la complessità ritmica e la preferenza per la musica saranno manipolate per valutarne l'

influenza su compiti di discriminazione e stima temporale, con l'ipotesi che livelli intermedi di complessità ritmica massimizzino il reward evocato e di conseguenza la sottostima temporale. I risultati potrebbero avere implicazioni sulla comprensione di come gli interventi basati sulla musica possano influire sulla regolazione cognitiva ed emotiva, in particolare in popolazioni cliniche.

If you're submitting a symposium talk, what's the symposium title?:

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience / 942

Virtual Reality Interventions for Mood Disorders: Exploring Heart Rate Variability Biofeedback and Time Perception Recalibration

Author: Francesca Mura¹

Co-authors: Giovanna Mioni ¹; Claudio Gentili ¹

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This study explores two innovative, immersive virtual reality (VR) interventions aimed at improving psychological wellbeing in individuals with moderate to severe depressive symptoms. The first intervention integrates heart rate variability biofeedback (HRV-BF), a technique known to promote autonomic balance by enhancing parasympathetic activity and reducing sympathetic dominance. The second intervention introduces a novel time perception recalibration approach using a VR game in which time advances only through user movement, targeting cognitive mechanisms linked to mood disorders. Altered time perception is commonly associated with anxiety and depression, yet remains an underexplored therapeutic target. To evaluate the effectiveness of these approaches, a randomized controlled trial was conducted with 30 participants, assigned to one of three groups: HRV-BF, time recalibration, or a control condition. Over four weekly sessions, participants engaged with their assigned VR experience using a head-mounted display, while physiological responses were monitored via wearable cardiac sensors. Results from this trial contribute to emerging evidence supporting the use of non-pharmacological, technology-enhanced methods for mental health treatment. By leveraging immersive VR environments, this study highlights the potential of targeting both physiological regulation and cognitive distortions to alleviate mood symptoms.

If you're submitting a symposium talk, what's the symposium title?:

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovations in psychometric modelling: New approaches to understanding psychological measurement / 581

An integrated game-based approach for assessing mathematical performance and related affective factors

Authors: MARIA ANNA DONATI¹; LAURA DI LEONARDO¹; CATERINA PRIMI¹

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Italian students have consistently underperformed in international mathematics assessments. Thus, innovative approaches to support learning in this domain are necessary. Educational games, which incorporate game-like elements into learning and assessment, have emerged as promising tools for enhancing students' engagement and improving learning outcomes. Moreover, affective components and attitudes toward mathematics are recognized as critical contributors to students' mathematical learning trajectories. This study aimed to develop a digital tool designed to assess mathematical competence and emotional responses to mathematics in children aged 6 to 11, enabling an integrated evaluation approach. The psychometric properties were analyzed using the two-parameter logistic (2PL) model inside the Item Response Theory (IRT) framework. A total of 1,012 primary school students (50% male), attending 1st through 5th grade, participated in the study. Scores on the performance component of the digital tool showed positive correlations with the Written Operations subtest of the AC-MT 6–11, a standardized measure of mathematical competence. The unpleasantness experienced in response to math-related stimuli was negatively associated with students' attitudes toward mathematics and effectively discriminated between different levels of math anxiety. Scores obtained from the digital tool also significantly contributed to explaining teacher-rated mathematical performance. These findings support using gamified tools in primary education to assess and monitor both performance and affective aspects of math learning.

If you're submitting a symposium talk, what's the symposium title?:

Innovations in psychometric modelling: New approaches to understanding psychological measurement

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni / 856

Navigazione urbana e uso del GPS: il ruolo di fattori individuali e diverse modalità d'uso

Author: Laura Miola¹

¹ Università degli Studi di Padova

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Introduzione. Con il progresso della tecnologia, il Global Positioning System (GPS) è sempre più utilizzato negli spostamenti quotidiani in ambienti urbani, pertanto comprendere le diverse tipologie di utilizzo del GPS e il suo impatto sulle abilità di navigazione umana è fondamentale.

Metodo e risultati. Da una revisione sistematica e metanalisi condotta su 23 studi, secondo le linee guida PRISMA, è emerso che l'uso dei sistemi di navigazione assistita con GPS è associato ad una ridotta conoscenza dell'ambiente ($r = -.18$ [95% CI: .28, .08]) e a un senso dell'orientamento più debole ($r = -.25$ [95% CI: .39, .12]), mentre gli effetti sull'abilità di wayfinding risultano non significativi ($r = .07$ [95% CI: .28, .41]). Tuttavia, la revisione ha evidenziato un rischio di bias da moderato ad alto tra gli studi, rendendo difficili conclusioni definitive. A partire da queste basi, un lavoro più recente ha identificato cinque tipologie distinte di utilizzo attraverso la GPS Uses Scale, e indagato le relazioni con fattori individuali quali età, genere, autoefficacia, piacere di esplorare e dipendenza dal GPS. I risultati suggeriscono che l'uso strategico del GPS è associato ad una maggiore autoefficacia spaziale,

a una maggiore dipendenza dal GPS. Inoltre, l'uso del GPS a fini di orientamento è associato ad una maggiore conoscenza ambientale e a maggiore dipendenza. Infine, gli uomini sembrano utilizzare meno il GPS rispetto alle donne.

Conclusioni. Questi studi chiariscono la relazione tra l'uso del GPS e la navigazione evidenziando l'importanza di distinguere tra un uso per orientamento e wayfinding e uno più attivo e strategico del GPS.

If you're submitting a symposium talk, what's the symposium title?:

Navigazione Spaziale in Ambienti Urbani: Recenti Evidenze Sperimentali e Applicazioni.

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Il ruolo del piacere musicale e del ritmo nei processi cognitivi, affettivi e sociali / 1020

Discussione generale

Corresponding Author: francesca.cantoni@u-bourgogne.fr

Thinking Climate, Feeling Nature: Psycho-Cognitive Dynamics / 1031

Open discussion

Innovations in psychometric modelling: New approaches to understanding psychological measurement / 1028

Discussion

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience / 1039

Open discussion

Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science / 555

Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science

Author: Stefano Vicentin¹

Co-author: Arianna Menardi²

¹ *Università di Padova*² *Department of Neuroscience, University of Padova***Corresponding Author:** stefano.vicentin@unipd.it

This symposium is organized with the aim of fostering a deeper understanding of Network Analysis as a theoretical and methodological approach in psychology. In recent years, Network Science has emerged as a powerful tool to model psychological constructs as systems of interacting components. This shift allows researchers to examine the structure, dynamics, and complexity of psychological functioning across individuals, time, and levels of analysis.

The symposium will address four key topics:

a) Theoretical and methodological foundations of psychological networks: The opening talk will provide an overview of the core principles of Network Science and its application to psychology, illustrating how this framework enables the modeling of mental phenomena as dynamic and interconnected systems.

b) Network psychometrics and intraindividual variability: Michela Zambelli (Università Cattolica del Sacro Cuore) will present a multilevel network model applied to daily diary data, showing how meaning-making unfolds over time through the interaction of core psychological components.

c) Personality architecture in healthy and pathological aging: Silvia Gobbo (Università di Milano-Bicocca) will explore age-related changes in personality structure using Exploratory Graph Analysis, comparing healthy older adults and individuals with Alzheimer's Disease.

d) Linking brain connectivity to cognitive and behavioral networks: Arianna Menardi (Università di Padova) will present findings on the relationship between psychometric networks and resting-state brain connectivity, using data from the Human Connectome Project.

By integrating theory-driven and data-driven perspectives, this symposium showcases the potential of Network Analysis to capture the multifaceted and dynamic nature of psychological processes.

If you're submitting a symposium talk, what's the symposium title?:

Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia / 684

Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia

Authors: davide marocco¹; monica mazza²

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Negli ultimi anni, l'affermazione dei Large Language Models (LLM) ha ridefinito l'interazione tra psicologia e scienze computazionali, offrendo strumenti inediti per la modellizzazione dei processi cognitivi complessi. Questi modelli, addestrati su vastissimi corpora tramite architetture neurali profonde, manifestano competenze emergenti quali inferenza semantica, astrazione concettuale e simulazione di dinamiche inferenziali ed emotive, avvicinandosi a tratti distintivi dell'intelligenza umana.

Il simposio esamina il ruolo trasformativo degli LLM nell'ambito della psicologia, concentrandosi in particolare sulla psicomетria e sulla psicologia cognitiva computazionale. Saranno presentati studi e applicazioni pionieristiche che impiegano gli LLM per la progettazione di strumenti psicodiagnostici più sensibili, adattativi e dinamici, sfruttando la loro capacità di interpretazione linguistica

profonda e contestualizzata. Verrà inoltre analizzato il parallelismo tra intelligenza artificiale generativa e processi mentali umani, esplorandone le implicazioni epistemologiche e teoriche derivanti da questa nuova coesistenza.

Integrazione, confronto e ridefinizione dei confini metodologici saranno al centro del dibattito, con l'obiettivo di comprendere in che modo la nuova intelligenza artificiale possa ampliare gli strumenti di indagine psicologica senza snaturarne l'essenza. Il simposio, quindi, si propone come un'occasione di confronto interdisciplinare diretta alla necessaria ridefinizione dei paradigmi della ricerca nel campo della psicologia nell'epoca dell'intelligenza generativa. In questo scenario, il confine tra mente artificiale e mente umana diventa terreno di esplorazione critica: un punto di incontro in cui psicologia e tecnologia non si contrappongono, ma si integrano nella costruzione di una nuova idea di intelligenza.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age
/ 621

The role of self-directed movement in the emergence of bodily-self representation: kinematic and EEG evidence in newborns

Author: Alice Rossi Sebastiano¹

Co-authors: Barbara Italia¹; Nicolò Castellani²; Lucia Cagliero¹; Elodie Frisenna¹; Giulia Borini³; Giulia Serra³; Chiara Peila⁴; Alessandra Coscia⁴; Francesca Garbarini¹

¹ MANIBUS Lab, Department of Psychology, University of Turin, Italy

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When we observe freely moving newborns, we may notice that, among their spontaneous movements, self-directed ones are the most frequent. Influential accounts have pioneeringly hypothesized that early self-exploratory movements may hold a significant evolutionary meaning, by fostering the emergence of a primitive bodily-self representation (Rochat et al., 2001). Indeed, self-directed movements may allow the observation of multisensory contingencies converging on one's own body, thus being at the origin of an early sense of self. Against this background, I will present a series of studies conducted in newborns (9-65 hours old) in which we aimed (1) to quantify the neonatal engagement in self-directed behavior and (2) to verify whether multisensory integration is enhanced following self- then externally-directed movements at birth. Specifically, we recorded (1) the newborns' kinematics during spontaneous movement and (2) their EEG responses to unimodal (tactile and auditory) and multimodal (audio-tactile) stimuli delivered after self- or externally-directed movements. Interestingly, kinematic data reveal a significantly greater proportion of self- than externally-directed movements, especially targeting the trunk. Crucially, EEG results show significantly greater super-additive responses (i.e., with enhanced ERP amplitude in bimodal than unimodal) following self- as compared to externally-directed movements. These converging kinematic and electrophysiological findings pinpoint the importance of bodily-targeted motor behaviour early in life, since it promotes intermodal perception. In conclusion, our results endorse self-directed behaviour as a crucial context fostering the emergence of bodily-self representation in early typical development, thus laying the groundwork for investigating its possible alteration in atypical development.

If you're submitting a symposium talk, what's the symposium title?:

The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Memoria e azione: quali interazioni, quali confini? / 490

Memoria e azione: quali interazioni, quali confini?

Author: Francesco Iani¹

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Recenti sviluppi nell'ambito della scienza cognitiva (e.g. Iani, 2019) e della filosofia della memoria (e.g. Righetti, 2024) hanno sottolineato quanto sia importante considerare la memoria umana, non più un nucleo cognitivo indipendente e isolato, ma come ontologicamente connessa con i sistemi di percezione e azione. Secondo quella che viene definita "embodied cognition" (EC), l'elaborazione delle informazioni legate alle azioni (sia quelle osservate sia quelle prodotte) riveste un ruolo centrale anche all'interno di domini classicamente considerati puramente cognitivi, quali la memoria semantica o quella esplicita. La traiettoria di questa nuova prospettiva è stata per certi aspetti sorprendenti, a tal punto da divenire la cornice teorica di numerosi filoni di ricerca teorici e applicativi. Il simposio si propone in prima istanza di offrire alcuni esempi in cui l'elaborazione di informazioni motorie e procedurali risulta essere in grado di plasmare aspetti salienti del funzionamento cognitivo. La declinazione della centralità dell'azione nei sistemi di memoria può essere duplice: da una parte, il modo con cui ricordiamo le azioni dipende fortemente dai processi di risonanza motoria che avvengono durante la fase di codifica dell'azione stessa (e.g. Iani et al., 2023), dall'altra il modo con cui ricordiamo eventi, oggetti e situazioni dipende dal "contesto motorio" in atto al momento del recupero (e.g. Limata et al., 2023). Il simposio mira, inoltre, a sottolineare la necessità di ridefinire i rigidi confini tra ciò che definiamo ambiente, corpo e cognizione, nonché i confini all'interno delle diverse funzioni cognitive.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia / 944

I LLM sono dei buoni simulatori dei processi cognitivi?

Author: Giuseppe Sartori¹

Co-author: Merylin Monaro¹

¹ *UNIPD*

Corresponding Author: giuseppe.sartori@unipd.it

Dalla rassegna da noi condotta emerge con chiarezza che i Large Language Models (LLM) costituiscono modelli della cognizione umana in grado di simulare efficacemente una molteplicità di aspetti. Sebbene in alcuni ambiti sia stata documentata una divergenza tra il funzionamento degli LLM e

quello della mente umana, riteniamo che l'ampiezza dei fenomeni cognitivi attualmente simulati da tali modelli sia tale da poter sostenere che, allo stato attuale della ricerca, nessun altro modello cognitivo risulti più comprensivo degli LLM. Tale posizione trova un riscontro empirico sistematico nel lavoro di Binz. Alla luce dell'elevato grado di somiglianza emerso da questa rassegna, si ritiene che qualsiasi futura affermazione circa una presunta "diversità" operativa tra LLM e mente umana debba fondarsi su dati empirici, piuttosto che essere formulata apoditticamente sulla base dell'intuizione soggettiva del ricercatore.

Ciò che pare emergere dalle critiche rivolte all'intelligenza artificiale è l'aspettativa che tali modelli esibiscano prestazioni prive di errori in una vasta gamma di domini applicativi, configurandosi così più come forme di superintelligenza che come simulazioni della mente umana. Se si accoglie questa impostazione, e considerando che gli LLM tendono a manifestare prestazioni maggiormente affini a quelle umane piuttosto che nettamente divergenti, appare opportuno integrare le evidenze provenienti dagli studi cognitivi. Tali studi consentono infatti di comprendere i limiti strutturali del sistema cognitivo umano e possono, di conseguenza, orientare la ricerca nel campo dell'intelligenza artificiale verso lo sviluppo di sistemi non soggetti a errore e, pertanto, pienamente affidabili.

If you're submitting a symposium talk, what's the symposium title?:

Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences / 979

Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences

Author: Alessio Avenanti¹

Co-authors: Giacomo Guidali²; SIMONA MASSIMINO³; Zaira Cattaneo

¹ *Università di Bologna*

² *Department of Psychology, University of Milano-Bicocca*

³ *Università di Messina*

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This symposium explores the neural foundations of the social brain, highlighting how social perception emerges from the dynamic interplay between brain networks supporting perception, action, and cognition. Through a set of complementary studies, we will present how visual, motor, and cerebellar networks support the encoding of social signals, adapt through experience, and vary across individuals.

A central theme of the symposium is the functional relevance of connectivity across brain regions involved in processing social cues—whether visual, emotional, or action-related. From early visual cortices and the superior temporal sulcus to motor and cerebellar areas, these circuits form dynamic networks whose interactions are crucial for decoding facial expressions, perceiving others' actions, and engaging in socially meaningful behaviors.

Another focus is on neural plasticity: how the brain's social circuits can be reshaped through experience, learning, or targeted modulation. Across studies, we examine the capacity of the social brain to adapt—whether by strengthening specific cortico-cortical pathways, revealing experience-dependent changes in motor resonance, or uncovering modulatory influences between cerebellar and cortical structures.

The symposium also addresses individual differences in social responsiveness. By examining variability in emotional and sensorimotor reactivity to socially charged stimuli, we uncover how personal attitudes and predispositions are mirrored in neural processing patterns.

The symposium brings together researchers at different career stages, offering diverse perspectives on advancing our understanding of the social brain through innovative neurostimulation techniques.

Together, these contributions provide a multidimensional view of social cognition, integrating mechanisms of connectivity, plasticity, and individual variability.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Memoria e azione: quali interazioni, quali confini? / 662

Enactment, emozioni ed expertise motoria: quale impatto sulla memoria?

Authors: Silvia Serino¹; Paola Ricciardelli²; Rossana Actis-Grosso³; Patrizia Steca²

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La memoria per le azioni è stata ampiamente indagata nella letteratura psicologica, con evidenze robuste a supporto dell'effetto enactment, ovvero il vantaggio mnestico derivante dall'esecuzione motoria dell'azione espressa da una frase o da un verbo durante la codifica. Tuttavia, restano da chiarire i fattori che modulano tale effetto. Nel primo studio, abbiamo indagato l'interazione tra enactment e valenza edonica degli stimoli. I risultati hanno evidenziato effetti principali indipendenti: la codifica motoria ha migliorato la ritenzione rispetto a quella verbale, mentre la valenza edonica ha influenzato in modo differenziato le prestazioni mnestiche. Gli stimoli negativi hanno favorito il richiamo libero, mentre sia stimoli negativi sia positivi hanno migliorato l'accuratezza nel riconoscimento. L'assenza di un'interazione significativa suggerisce un contributo additivo tra codifica enactment e valenza edonica. A partire da queste evidenze, il secondo studio ha approfondito il ruolo dell'expertise motoria nella modulazione dell'effetto enactment. Precedenti ricerche indicano che gli atleti mostrano una memoria potenziata per contenuti congruenti con il proprio dominio e attivano più efficientemente i circuiti sensomotori anche in compiti cognitivi. Sessanta atleti hanno codificato frasi d'azione a valenza negativa, neutra o positiva, mediante codifica verbale o enactment. Come atteso, nella codifica verbale gli stimoli emotivi hanno facilitato la prestazione mnestica. Tuttavia, nella condizione di enactment, la performance è risultata elevata in modo uniforme per tutte le categorie emotive, annullando il vantaggio specifico legato all'emozione. Questi risultati avanzano la comprensione di come l'elaborazione sensomotoria e la modulazione emotiva influenzino la memoria, contribuendo a ridefinire i confini tra corpo, cognizione e ambiente.

If you're submitting a symposium talk, what's the symposium title?:

Memoria e azione: quali interazioni, quali confini?

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age / 611

The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age

Author: Francesca Frisco¹

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Perceiving the body as one's own relies on the integration of multisensory information such as vision, touch, and proprioception. Although multisensory mechanisms underlying body representation have been widely investigated in adulthood, how these processes develop at birth and change with aging remains poorly understood. This symposium aims to provide a comprehensive, lifespan-oriented perspective on body representation, shedding light on the dynamic development and modulation of the bodily self from infancy to old age.

From a developmental perspective, Alice Rossi Sebastiano (University of Turin) presents kinematic and EEG data demonstrating that the more frequent self-directed movements in newborns enhance multisensory integration, promoting the emergence of a primitive bodily self. Mattia Galigani (University of Turin) illustrates how motor development supports the visual differentiation of the body. Using EEG frequency-tagging, he shows how infants distinguish their hands from external objects, with this response linked to fine motor skills.

Regarding age-related changes, Gaia Rizzo (Institute of Health, Sion) investigates alterations in metric body representation and ownership sensations in older adults, linking these changes to proprioceptive decline through virtual reality, psychophysical, and computational methods. Angela Marotta (University of Verona) illustrates the modulation of body ownership across young, middle-aged, and older adults using the well-established rubber hand illusion, reflecting age-related changes in the perceptual and cognitive functions underlying body representation.

Collectively, these studies offer a multifaceted, multi-approach perspective on the multisensory processes that shape body representation across different life stages, providing new directions for research on how the bodily self develops and adapts throughout the lifespan.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science / 1018

Introduction to Network analysis and the contents of the symposium

Corresponding Author: stefano.vicentin@unipd.it

Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences / 1042

Introduction

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Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences / 981

Motor Cortex Excitability and Vaccine Hesitancy: A TMS Approach to Sensorimotor Responses

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The Centers for Disease Control and Prevention recommends updated COVID-19 vaccines for the 2024–2025 season, emphasizing their importance in preventing severe illness and hospitalization. Nonetheless, vaccine hesitancy continues to represent a critical barrier, undermining the success of immunization efforts and contributing to the ongoing circulation of the virus. To better understand the psychological and neurophysiological mechanisms associated with vaccine hesitancy and resistance, we investigated sensorimotor responses to vaccination-related stimuli in individuals characterized by different levels of hesitancy. Using transcranial magnetic stimulation, we measured motor-evoked potentials in the deltoid muscle—a typical site of vaccine administration—while participants viewed images depicting people receiving the COVID-19 vaccine, alongside control conditions involving the same muscle. Our results revealed a selective increase in deltoid motor cortex excitability in highly hesitant individuals, as compared to low-hesitant ones, specifically in response to images of COVID-19 vaccination. This effect was not observed when participants viewed images of flu vaccination or when excitability was measured in a control muscle (extensor carpi radialis). These findings suggest that COVID-19 vaccine imagery triggers a somatotopically localized motor facilitation in highly hesitant individuals, potentially reflecting an anticipatory or automatic avoidance response. Such motor patterns are typically associated with the processing of threatening or emotionally charged stimuli, pointing to the role of affective and embodied mechanisms in shaping attitudes toward vaccination.

Keywords: COVID-19 anti-vaccination attitude; Motor cortex excitability; Deltoid; Transcranial magnetic stimulation; vaccine hesitancy

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Memoria e azione: quali interazioni, quali confini? / 604

Il ruolo delle simulazioni sensomotorie nel potenziamento della memoria: quale tipologia è più efficace?

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La letteratura ha dimostrato che la memoria può essere influenzata da simulazioni sensomotorie che avvengono durante la codifica, come quelle coinvolte nell'immaginazione mentale (IM), nell'osservazione dell'azione (AO) o nelle *affordance* suscitate dalla presentazione visiva di oggetti (OBJ). Tali simulazioni possono migliorare la memoria creando tracce mnestiche multimodali, più ricche e accessibili. Tuttavia, in letteratura l'impatto di queste diverse simulazioni non è mai stato direttamente confrontato né sono state indagate potenziali interazioni sulla memoria. Il presente studio propone di colmare questo *gap* manipolando contemporaneamente AO, IM e OBJ, e valutando i loro effetti singoli e combinati sulla memoria episodica di oggetti inizialmente codificati come parte di una frase di *grasping* (ad esempio, "Stai afferrando una forchetta" o "Stai afferrando un ago"). Adottando un disegno *between-subject*, 163 partecipanti sono stati assegnati alle diverse condizioni di codifica sensomotoria e la loro memoria è stata testata in un compito di richiamo libero 15 minuti dopo la codifica. I nostri risultati hanno mostrato un effetto principale di AO che suggerisce il suo ruolo predominante nel potenziamento della memoria. Inoltre, un'interazione a tre vie tra AO, IM e OBJ ha mostrato come il ruolo facilitante di AO possa essere diminuito da IM e OBJ. Infine, forniamo la prima evidenza che il tratto individuale dell'abilità nell'immaginazione cinestesica (IC) interagisce con l'effetto di AO, in quanto a livelli più elevati di IC sono associati effetti ridotti di AO, suggerendo potenziali meccanismi distinti alla base delle simulazioni mentali coinvolte nell'immaginazione motoria e quelle coinvolte nell'osservazione dell'azione.

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Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia / 947

Problem solving nei Large Language Models

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I modelli linguistici di grandi dimensioni (LLM) hanno dimostrato buone prestazioni in numerosi compiti di ragionamento e problem solving tipicamente studiati dalla psicologia cognitiva. Quando sottoposti a test, la loro accuratezza risulta spesso comparabile a quella di adulti neurotipici, mettendo in discussione critiche storiche rivolte ai modelli associazionistici. In questo contributo analizziamo i risultati più recenti situati all'intersezione tra LLM e scienze cognitive. Discutiamo di come i LLM moderni recuperino principi dell'associazionismo, dimostrando capacità quali l'elaborazione di associazioni a lunga distanza, fondamentali per il ragionamento complesso. Permangono tuttavia alcune limitazioni, in particolare nelle aree della cognizione causale e della pianificazione. Tuttavia, fenomeni come l'emergenza lasciano intravedere ulteriori margini di sviluppo. L'introduzione di esempi e l'aumento delle dimensioni della rete si rivelano strategie efficaci per potenziare le capacità dei LLM, rispecchiando effetti di facilitazione osservati nella cognizione umana. L'analisi sistematica degli errori commessi dai LLM offre, inoltre, nuove prospettive per lo studio dei bias cognitivi umani. In sintesi, si sostiene che i LLM rappresentino un'opportunità promettente per la modellizzazione cognitiva, aprendo nuove possibilità di indagine sui meccanismi sottostanti all'intelligenza e al ragionamento, in un'ottica associazionistica. Una valutazione rigorosa dei LLM mediante gli strumenti della psicologia cognitiva potrà contribuire in modo significativo alla comprensione delle componenti fondamentali della mente umana.

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Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science / 680

Understanding Meaning-Making in Daily Life Through Multilevel Network Psychometrics

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Intensive longitudinal designs, such as daily diary and experience sampling methods (Bolger & Laurenceau, 2013), offer valuable opportunities to study psychological processes as they unfold in the ecological context of daily life. However, the richness of the data collected through these designs requires sophisticated tools to leverage both inter-individual and intra-individual variability. Multilevel models of Network Psychometrics are particularly suited to exploring the conditional dependencies between core components of psychological processes investigated with intensive data collections, by distinguishing within-subject dynamics (including contemporaneous and lagged temporal effects) while accounting for stable individual differences. This contribution presents an application of Multilevel Network Psychometrics (Epskamp, 2021), to test a theoretical model that conceptualizes meaning-making as an emergent process resulting from the interplay among six core components over time (Zambelli & Tagliabue, 2022). The sample included 66 Ukrainian social workers engaged in the war emergency context and 23 social workers in training, who participated in a 30-day diary study completing twice a day a six-item self-report measure assessing situational meaning in life (SMILE; Zambelli & Tagliabue, 2024). Results showed a contemporaneous network of positive associations between meaning components within the same day. The temporal network unveiled that search for significance and purpose were the most fluctuating ones, that engaging in search for significance was predicting finding meaning in life (especially significance and coherence) the following day, while finding purpose in life increased the involvement in search for significance over time. Potentialities and challenges of multilevel networks to investigate dynamics of psychological processes are discussed.

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The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age / 808

Motor Development Supports the Emergence of Visual Body Representation in Infants

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The ability to distinguish one's own body from the external world is a crucial milestone in early development. Hands may play a crucial role in this process: from the earliest spontaneous movements, as infants engage in visually guided actions, the integration of visual, proprioceptive, and motor information may strengthen their ability to discriminate their own hands from the environment. In this study, we examined when infants begin to represent hands as a distinct perceptual category from objects, and whether this ability is influenced by motor development. Using an EEG frequency-tagging visual paradigm, we measured infants' brain responses while they viewed sequences of object images, with hands embedded at a fixed periodic rate. We tested two age groups: 3–4 months (before grasping typically emerges) and 6–7 months (after grasping onset). Furthermore, motor skills were assessed using the Peabody Developmental Motor Scales. A significant neural response at the hand presentation frequency was observed only in the 6–7-month-old group, suggesting that hand-object visual discrimination emerges after grasping onset. Importantly, the greater the amplitude of the visual discrimination response of the hand, the higher the scores on the subscale assessing fine movements of the hand (but not gross movements of other body parts). This indicates that sensorimotor experience, especially involving hand motor control, may support the development of abstract body representations, also promoting a foundational step toward the emergence of bodily self-awareness early in life.

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Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences / 972

Mirror, mirror on the screen: Influencing motor cortex excitability through action observation and Hebbian associative plasticity

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Introduction. Hebbian plasticity has been implicated in the formation of associations between sensory and motor representations of actions, contributing to the emergence of the motor resonance phenomenon (i.e., activation of the motor system at the sight of other people's actions, driven by the action observation network, and underlying different facets of social cognition).

Methods. Our research group developed a visuomotor Paired Associative Stimulation protocol (mirror PAS, m-PAS) to modulate motor resonance responses through Hebbian associative plasticity. The m-PAS repeatedly pairs transcranial magnetic stimulation (TMS) pulses over the primary motor cortex (M1) with visual stimuli depicting actions that are not associated, in baseline, with the motor resonance phenomenon. After its administration, atypical motor resonance emerges during PAS-conditioned action observation. Recent advances obtained with this protocol will be presented.

Results. On healthy participants, we deepened m-PAS aftereffects through TMS and electroencephalography (EEG) co-registration, highlighting that novel PAS-induced motor resonance responses are linked to modulations of M1 beta-band cortical connectivity, only partially overlapping interregional communication patterns related to the typical phenomenon. On patients, data from the stroke population with upper limb hemiparesis shows m-PAS effectiveness in modulating ipsilesional motor cortex excitability in a muscle-specific fashion, according to the kinematic characteristics of the movement visually conditioned during the protocol.

Conclusion. Our findings suggest that visuomotor associative plasticity driven by action observation is crucial in influencing motor resonance responses and M1 excitability. The m-PAS can be a powerful tool to causally modulate the visuomotor plastic properties of mirror networks in the healthy and damaged brain.

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Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia / 844

Applicazioni di LLM alla psicometria: dalla predizione di strutture fattoriali ai digital twins

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L'intelligenza artificiale attraversa un "cambio di paradigma" avviato dai grandi modelli linguistici (LLM). Questi modelli hanno raggiunto un'accuratezza senza precedenti in moltissimi compiti di elaborazione del linguaggio naturale. Il successo degli LLM è dovuto principalmente alla loro capacità di rappresentare le parole nel loro contesto attraverso i cosiddetti "embeddings": vettori di numeri capaci di catturare relazioni semantiche tra parole e frasi.

Gli LLM hanno rapidamente suscitato interesse nella ricerca psicologica, grazie alla loro capacità di elaborare input linguistici in modo simile agli esseri umani, offrendo la possibilità di replicare e studiare i processi alla base del comportamento. Due applicazioni dell'IA alla psicometria sono particolarmente interessanti: (1) utilizzare gli LLM come decodificatori di senso, analizzando i loro embeddings per osservare come vengono organizzati gli item di un test e come questa organizzazione correla con le risposte degli esseri umani. Questo approccio permette di predire la struttura fattoriale di un test prima della reale somministrazione e può risultare utile in fase di costruzione o validazione di un test; (2) creare "digital-twins" di persone specifiche, attraverso la ricostruzione tramite LLM dei loro tratti psicologici per mezzo di interviste e la somministrazione di test psicometrici. Ciò permette di riprodurre e predire il comportamento di queste persone in contesti diversi. Inoltre, le recenti tecniche di reinforcement-learning, consentono un addestramento non supervisionato degli LLM, gettando le basi per studiare proprietà emergenti del ragionamento, piuttosto che repliche del comportamento umano, aprendo la strada alla generazione sintetica di popolazioni di agenti di cui sarà possibile studiarne il comportamento.

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Memoria e azione: quali interazioni, quali confini? / 496**Effetto dell'attività motoria congruente durante il recupero di concetti manipolabili****Authors:** Cosimo Tuena¹; Francesco Iani²; Daniele Di Lernia³; Giuseppe Riva⁴; Claudia Repetto⁵¹ *Dipartimento di Scienze Teoriche e Applicate, Università degli Studi eCampus, Novedrate, Italia; Applied Technology for Neuro-Psychology Lab, IRCCS Istituto Auxologico Italiano, Milan, Italy*² *Dipartimento di psicologia, Università degli studi di Torino*³ *1Dipartimento di Scienze Teoriche e Applicate, Università degli Studi eCampus, Novedrate, Italia*⁴ *Applied Technology for Neuro-Psychology Lab, IRCCS Istituto Auxologico Italiano, Milan, Italy*⁵ *Università Cattolica del Sacro Cuore Milano***Corresponding Author:** cosimo.tuena@unicampus.it

Introduzione: Recenti ricerche sull'embodiment suggeriscono che il sistema motorio è coinvolto durante il processamento di concetti manipolabili rispetto a quelli non manipolabili. Tuttavia, non è chiaro se il sistema motorio sia coinvolto durante il recupero di categorie naturali manipolabili (i.e., frutta).

Metodi: 46 giovani adulti hanno svolto un compito di accesso semantico-lessicale (fluenza semantica; FS) con una procedura di soppressione motoria. I partecipanti sono stati assegnati a due condizioni di soppressione motoria: congruente (movimenti delle mani) o incongruente (movimenti delle gambe) rispetto alla manipolabilità. In un design misto, abbiamo valutato le prestazioni di FS per categorie manipolabili (frutti) e non manipolabili (colori), misurando il numero di parole, la latenza di risposta, l'indice di velocità di FS (FSI) e metriche relative alla struttura del magazzino semantico.

Risultati: Abbiamo osservato un'interazione significativa tra categoria di FS e condizione di soppressione motoria per l'FSI. I partecipanti nella condizione di soppressione con le mani hanno mostrato un recupero più rapido per i frutti rispetto ai colori e più rapido rispetto alla condizione con le gambe per la frutta. Nessun risultato significativo è stato osservato per gli altri indici.

Conclusioni: Questi risultati suggeriscono un effetto inatteso di facilitazione motoria piuttosto che di interferenza durante il recupero di concetti naturali manipolabili. La soppressione motoria congruente sembra attivare, anziché inibire, le rappresentazioni semantiche legate alla manipolabilità, rivelando un meccanismo complesso di interazione tra sistemi motori e memoria semantica.

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Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science / 523**Personality architecture through healthy and pathological ageing****Authors:** Daniele Romano¹; Elena Trapattoni²; Silvia Gobbo²¹ *Università degli Studi di Milano-Bicocca*² *University of Milan-Bicocca***Corresponding Author:** silvia.gobbo@unimib.it

Traditional personality theories propose a universal structure based on a limited set of traits (e.g., Big Five, HEXACO). However, factors such as aging and Alzheimer's Disease (AD) may alter this structure. Prior research suggests that healthy aging reorganizes rather than simplifies personality. In contrast, AD appears to affect both cognition and personality, with caregivers frequently reporting notable changes. While some studies have explored dimensional personality changes in AD using Big Five models, none have done so within the HEXACO framework, nor questioned the underlying structure. This study addresses that gap by analyzing caregiver-reported personality in AD patients (N = 193) using the HEXACO Adjective Scale. Data were analyzed with Exploratory Graph Analysis (EGA), a network psychometrics method that estimates regularized partial correlations among items and detects latent dimensions as clusters of interconnected traits. Unlike traditional factor analysis, EGA allows for a more flexible, data-driven assessment of personality structure, especially in pathological contexts where trait organization may deviate from normative patterns. Results reveal a simplified personality structure in AD, diverging from the reorganized complexity observed in healthy aging. These findings suggest that cognitive decline may lead to structural personality alterations, not merely dimensional shifts. By leveraging network analysis, this study offers novel insights into how AD reshapes personality architecture, underscoring the value of psychometric network approaches in capturing nuanced changes. Ultimately, it highlights the need for a tighter integration between personality theory and cognitive research in the context of neurodegenerative disorders.

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The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age
/ 720

Sensing the body across the life-span: evidence from explicit and implicit components of bodily self-perception

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How do age-related changes impact bodily-self perception? We tackled this issue by investigating the effect of age on multisensory integration processes underlying the sense of body ownership – the feeling that “my body is mine.” Using the rubber hand illusion across three age groups (young, middle-aged, and older adults), we found that the explicit component of body ownership (the subjective and conscious experience of one's body belonging to the self) follows a U-shaped trajectory across the lifespan. Similar to young adults, older adults exhibited a stronger illusion, indicating greater flexibility in body representation compared to middle-aged participants. Conversely, middle-aged adults showed more resistance to the illusion, suggesting a more stable body representation than both younger and older adults. No age-related differences emerged in the implicit component of body ownership (e.g., proprioceptive drift). These findings are mainly interpreted in terms of different stages of development in perceptual and cognitive functions involved in the sense of body ownership.

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Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences / 969

TMS reveals the time course of the cerebellum and cerebellum-social brain causal connectivity during emotion discrimination

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Introduction

The posterior cerebellum has emerged as a pivotal component of the social brain, contributing to various socio-affective processes. Despite accumulating evidence of its involvement in social cognition, the temporal dynamics and causal interactions with cortical regions, such as the posterior superior temporal sulcus (pSTS), remain underexplored.

Methods

In a series of different experiments involving more than 100 different participants, we employed chronometric transcranial magnetic stimulation (TMS) to explore the time course of the involvement of different cerebellar sectors (left and right cerebellar hemispheres and vermis) in tasks tapping on facial emotion discrimination. Moreover, we employed a condition-and-perturb TMS paradigm to assess the causal functional connectivity between the left posterior cerebellum and the right pSTS.

Results

We revealed that when perceiving emotional faces, the medial posterior cerebellum is recruited in the initial stages of emotional processing, while the posterolateral cerebellum is recruited at a later stage. Furthermore, we found that the involvement of the posterolateral cerebellum in emotional processing is asymmetric: only the left (but not the right) posterolateral cerebellum is causally recruited in this socioemotional task.

Discussion

Our findings provide the first causal evidence of the posterior cerebellum's early involvement in emotional processing and its functional interplay with the pSTS. These results underscore the cerebellum's integral role within the social brain network, extending beyond traditional motor functions. Understanding this cerebellar-cortical interaction offers new insights into the neural mechanisms underpinning social cognition and has potential implications for interventions targeting social cognitive deficits.

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Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia / 768

TOWARDS A NEW MEASURE OF COGNITIVE ABSTRACTION: LLM-ASSISTED DEVELOPMENT OF A NEW PSYCHOMETRIC INSTRUMENT

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Introduction

Abstract intelligence and non-verbal thinking are essential components in understanding cognitive potential, especially in individuals with intellectual giftedness. However, traditional psychometric measures tend to underestimate these dimensions, favouring verbal and academic components. This study proposes the development of a new instrument for assessing cognitive abstraction, based on symbolic, logical, visuospatial and divergent items. Particularly, the study explores the usefulness of Large Language Models (LLM) in the assisted construction of psychometric tests, exploiting their generative capacity to develop content consistent with theoretical models of intelligence and adaptable to different cognitive profiles.

Method

The instrument consists of 70 items divided into subsections (visual matrices, mental rotations, logical proportions, divergent tasks). The LLM was used to generate, adapt and organise the items, ensuring semantic coherence and difficulty progression. The battery was administered to 100 individuals, aged between 18 and 40 years. The Verbal Judgements Test was used as a comparison measure.

Results and Conclusions

The psychometric analyses conducted on the items, with particular focus on Item Response Theory, together with the evidence of validity and reliability, confirm the methodological robustness of the instrument and its adequacy in measuring the construct under investigation. The use of the LLM made it possible to design an innovative, multidimensional and culturally fair psychometric instrument. The model offers a new paradigm of test design, in which generative artificial intelligence becomes a concrete resource for psychological research. The results open promising perspectives for the use of AI in the construction of flexible, sensitive and scientifically based assessment instruments.

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Memoria e azione: quali interazioni, quali confini? / 762

Simulazioni predittive dell'azione e distorsioni mnestiche: evidenze comportamentali e di neuromodulazione

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La semplice osservazione di azioni è in grado di indurre una simulazione mentale implicita degli stati successivi di quanto osservato. La simulazione mentale può a sua volta generare distorsioni mnestiche, producendo falsi riconoscimenti per immagini che rappresentano la naturale continuazione dell'azione originaria.

Nell'Esperimento 1, 33 partecipanti hanno osservato 18 brevi video, raffiguranti il momento centrale

di azioni di raggiungimento e manipolazione di oggetti (e.g. afferrare una bottiglia per bere), compiute con mani o piedi. Dopo 15 minuti, è stato somministrato un compito di riconoscimento verbale a due alternative (Sì/No), includendo immagini tratte dalla parte di video studiata oppure dalla parte precedente o successiva la parte di video studiata. I risultati, a sorpresa, hanno mostrato un effetto di distorsione all'indietro. Nell'Esperimento 2 ($N = 52$), gli stessi video sono stati suddivisi in base alle singole componenti di raggiungimento o manipolazione dell'oggetto (e.g. raggiungere la bottiglia vs prendere la bottiglia). Con la stessa procedura, si è osservato un effetto di distorsione in avanti per entrambe le tipologie di azioni, indipendentemente dall'effettore (mani o piedi). Nell'Esperimento 3 ($N = 53$), l'applicazione di stimolazione magnetica transcranica (TMS) theta burst sull'area motoria supplementare della mano (SMA) destra ha ridotto le distorsioni in avanti per azioni eseguite con le mani ma non per quelle eseguite con i piedi. Nella condizione sham, invece, le distorsioni in avanti sono rimaste invariate per entrambi gli effettori. Questi risultati suggeriscono un ruolo causale dell'area motoria supplementare nella simulazione predittiva dell'azione e nelle conseguenti distorsioni mnestiche "in avanti".

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Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science / 551

Investigating Brain-Behavior Architecture Using Graph-Based Network Analysis: Preliminary Insights from Resting-State fMRI

Authors: Arianna Menardi¹; Zeynep G. Ozer²

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Introduction: Network analysis provides a systematic, quantitative approach to modeling and understanding complex systems, and it has gained traction in both neuroscience and psychology. However, interdisciplinary collaboration between these fields from a network analysis perspective remains limited. In trying to bridge this gap, we investigated how the network structure of seven cognitive domains is interrelated to the topology of the brain's resting-state functional connectivity (rs-FC). **Methodology:** Exploratory graph analysis was performed on the available cognitive and behavioral data of 379 healthy young individuals of the Human Connectome Project. Seven separate but related clusters were extracted: Mental Health, Externalizing problems, High-level Cognitive Functions, Basic Cognitive Functions, Substances use/abuse, Reward Delay Discounting and Pain. For the rs-FC data, graph theory metrics—clustering coefficient, participation coefficient, nodal strength, and betweenness centrality—were computed to capture both network segregation and integration. Generalized additive models were then performed to link the cognitive network's clusters with the rsFC topology data. **Results:** Findings revealed that each cognitive-behavioral cluster is influenced by connectivity patterns between several brain networks. Specifically, higher segregation within the Default Mode Network (DMN), and greater integration in the Frontoparietal and Ventral Attention networks, were linked to adaptive cognitive functions. Conversely, increased integration of the DMN and Sensorimotor networks, along with greater segregation of Dorsal Attention systems, were associated with maladaptive behaviors such as impulsivity and substance abuse. **Conclusions:** These findings underscore the tight link between the architecture of the brain and the cognitive network, highlighting the value of network analysis in understanding brain-behavior dynamics.

If you're submitting a symposium talk, what's the symposium title?:

Mapping the Mind: investigating the relationships across Psychometric and Neural variables through Network Science

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Yes

Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences / 977

Driving Hebbian plasticity in temporo-occipital back-projections improves visual perception of emotions

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Introduction: The posterior superior temporal sulcus (pSTS) and early visual cortices (V1/V2) form a reciprocal network crucial for decoding emotional facial expressions. While recursive processing models underscore the significance of feedback connections, the causal impact of pSTS-to-V1/V2 back-projections on emotion perception remains underexplored. This study investigates whether tailoring cortico-cortical paired associative stimulation (ccPAS) to the specific dynamics of cortico-cortical interactions between pSTS and V1/V2 can enhance emotion recognition.

Methods: First, we used TMS-EEG co-registration to determine propagation time from pSTS to V1/V2. Based on this timing, we designed a ccPAS protocol to enhance pSTS-to-V1/V2 back-projections via Hebbian plasticity. Through behavioral and neurophysiological experiments, we tested ccPAS effects on resting-state physiology, facial expression recognition, and event-related potentials (ERPs) to emotional faces.

Results: ccPAS specifically tailored to neural communication timing from pSTS to V1/V2 selectively increased the strength of pSTS-to-V1/V2 connectivity. This enhancement correlated with improved participants' ability to recognize facial expressions under challenging conditions, without affecting gender discrimination tasks. Additionally, ERPs revealed increased amplitude of the P1 component, localized over V1/V2. No significant effects were observed in control conditions, underscoring the importance of precise timing and directionality in ccPAS protocols.

Conclusions: Our findings provide causal evidence that targeted modulation of the pSTS-to-V1/V2 pathway enhances emotion recognition performance. These results demonstrate that ccPAS can selectively strengthen effective connectivity between brain regions through Hebbian-like associative plasticity. Our work advances the understanding of how cortico-cortical pathways contribute to perception and showcases ccPAS as a promising neuromodulation technique for enhancing brain network communication and function

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Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences

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Memoria e azione: quali interazioni, quali confini? / 537

Il linguaggio silenzioso del corpo: il ruolo della postura nell'osservazione dell'azione

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Secondo l'embodied cognition le risorse motorie giocano un ruolo centrale nei processi cognitivi. Nell'osservazione dell'azione, il riconoscimento degli stati successivi avviene più rapidamente rispetto a quelli precedenti grazie a una simulazione motoria implicita ed automatica in avanti (Iani et al., 2022). Tuttavia, questo vantaggio è ridotto da una postura che limita la capacità di agire (e.g. braccia bloccate dietro la schiena) suggerendo che tale processo è almeno in parte motorio (Iani et al., 2021). Attualmente, stiamo esplorando se il riconoscimento degli stati antecedenti dell'azione osservata dipenda maggiormente dai processi di ragionamento. I partecipanti (N=90) osservano una serie di video rappresentanti la fase centrale di un'azione e subito dopo ogni video, vedevano una foto rappresentante la fase antecedente dell'azione vista o un'altra azione. I partecipanti dovevano rispondere "SÌ" se l'azione nella foto corrispondeva a quella del video, o "NO" in caso contrario. I partecipanti sono stati assegnati a tre gruppi: il gruppo di controllo ha svolto il compito senza interferenze, mentre il gruppo con interferenza motoria è stato istruito a mantenere le braccia incrociate e bloccate dietro la schiena. Infine, nel gruppo esecutivo centrale abbiamo aggiunto beep ad alta o bassa frequenza durante la presentazione dei video e, alla fine, dovevano inserire il numero di beep ad alta frequenza che avevano sentito. I risultati preliminari indicano che l'interferenza con il sistema esecutivo centrale ha rallentato, seppur marginalmente, il riconoscimento degli stati antecedenti all'azione osservata. Tuttavia, una postura interferente riduce l'accuratezza, suggerendo che il sistema motorio sia cruciale nella comprensione dell'intera azione.

If you're submitting a symposium talk, what's the symposium title?:

Memoria e azione: quali interazioni, quali confini?

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The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age
/ 698

Body perception in healthy aging –insights from a Psychophysical and Computational Approach

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Introduction: The way we perceive our body and its dimensions depends on how our brain combines information from different senses (Blanke et al. 2015). As the human sensory system declines with age, affecting all sensory modalities (Cavazzana et al. 2018), we hypothesize that body perception may differ between older and younger adults.

Methods: We investigate this hypothesis by comparing the experiences of young and older individuals (>65 years) of owning a body (body ownership, BO) and its perceived dimensions (metric body representation, mBR). We applied computational and psychophysical methods to assess alterations

in mBR and BO quantitatively. We then modeled the relationship between observed body misperceptions and potential underlying sensorimotor and cognitive factors.

Results: The results identified changes in body perception among healthy older adults. They have a distorted sense of their arm dimensions, confirming previous results (Sorrentino et al. 2021, Garbarini et al. 2015). Older adults also tend to feel ownership of an incongruent virtual hand, incorporating it into their motor plans. Impaired proprioception was identified as a common factor affecting different aspects of body experience.

Conclusions: Our approach offers new insights into altered body perception during aging, with implications for basic and applied neuroscience, and a broader understanding of neurocognitive aging. In this talk, I will discuss these results and follow-up studies further exploring the relationship between body ownership and proprioceptive abilities in a new sample with a wider age range and extending the investigation of mBR bias in older adults to include the perception of lower limbs.

If you're submitting a symposium talk, what's the symposium title?:

The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia / 897

LLMind to Enhance Diagnostic Decision-Making in Mental Health: Synergy Between AI Language Models and Clinical Expertise

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Background and aim: This study investigates the application of large language models (LLMs) as collaborative tools for mental health professionals, focusing on their integration with the ICD-11 framework. At the intersection of artificial and human cognition, we introduce LLMind Chat, an AI-driven interface to augment clinical reasoning by combining real-time retrieval of ICD-11 guidelines with advanced natural language processing.

Methods: Built on a Retrieval Augmented Generation (RAG) architecture using Gemma 2 (27B parameters), the system dynamically synthesizes diagnostic criteria, case histories, and evidence-based insights to support clinicians in complex decision-making scenarios. LLMind Chat's validation framework involved comparative analysis against the DSM-5-TR Clinical Cases manual, supplemented by expert clinicians' evaluations.

Results: Results indicate strong alignment between the model's diagnostic suggestions and clinical judgments (76.1% accuracy with moderate inter-rater agreement) particularly in cases involving anxiety-related and psychotic disorders-areas where ICD-11's approach benefits from computational precision. The tool prominently reduced classification errors most in disorders with overlapping symptomatology (e.g., trauma-related conditions).

Conclusions: By emphasizing the collaborative potential of AI rather than autonomous diagnosis, this work underscores how LLMs can extend clinicians' cognitive capacities while preserving human oversight. The system's dual chat modes -interactive case exploration and validation feedback- create a bidirectional learning loop refining algorithmic performance and clinical engagement. As mental health care navigates the complexities of modern classification systems, LLMind Chat exemplifies the transformative role of AI in bridging technological capabilities with psychological expertise, fostering a new paradigm where artificial and human intelligence coexist to enhance diagnostic accuracy and patient outcomes.

If you're submitting a symposium talk, what's the symposium title?:

Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia

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Mapping the Mind: Investigating the Relationships across Psychometric and Neural Variables through Network Science / 1019

Wrap up and final discussion

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Memoria e azione: quali interazioni, quali confini? / 1007

Discussione aperta

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Menti artificiali e menti umane: l'intelligenza al confine tra psicologia e tecnologia / 1036

Open discussion

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Dissecting the Social Brain with Neurostimulation: Mapping Connectivity, Plasticity, and Individual Differences / 1043

Discussion

The Body Across the Lifespan: How Body Representation Is Shaped from Infancy to Old Age / 1013

Domande e discussione

Corresponding Author: francesca.frisco@unimib.it

Lunch and poster 2 / 663

Promuovere trasparenza e rigore in psicologia: un framework inferenziale multiverse per la meta-analisi

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La crisi di replicabilità in psicologia ha messo in luce i rischi legati alla flessibilità dei ricercatori nelle fasi di raccolta, codifica e analisi dei dati –i cosiddetti “garden of forking paths”. Questa flessibilità analitica genera un multiverso di risultati plausibili, dei quali solo una parte - tipicamente i più favorevoli - viene riportata.

La Multiverse Analysis (MA) affronta questo problema valutando sistematicamente tutte le scelte analitiche ragionevoli, al fine di testare la robustezza dei risultati. Tuttavia, gli approcci MA attualmente disponibili sono principalmente descrittivi e non consentono di effettuare un’inferenza formale.

Per colmare questa lacuna è stato sviluppato il metodo PIMA (Post-selection Inference in Multiverse Analysis), basato su un framework di permutazioni multivariate. PIMA consente di formulare inferenze statisticamente valide tenendo conto della molteplicità analitica, mantenendo al contempo un buon equilibrio tra potenza statistica e controllo dell’errore di I tipo.

Il nostro lavoro estende questo approccio alla meta-analisi, un ambito in cui le decisioni soggettive (es. inclusione degli studi, gestione dei dati mancanti, scelta del modello) possono influenzare in modo sostanziale le conclusioni. Proponiamo PIMMA (Post-selection Inference for Multiverse Meta-Analysis) come uno strumento trasparente e statisticamente solido per gestire questa complessità. Il poster presenta la logica alla base di PIMMA, i passaggi chiave per la sua implementazione ed esempi di risultati ottenuti tramite simulazioni ed esempi applicativi, con il supporto di funzioni dedicate in R.

Questo lavoro mira a rendere l’inferenza robusta più accessibile all’interno dei framework multiverse e a promuovere pratiche meta-analitiche più trasparenti nella ricerca psicologica.

If you’re submitting a symposium talk, what’s the symposium title?:

If you’re submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Lunch and poster 2 / 716

Testing a Bifactor Exploratory Structural Equation Model (B-ESEM) of the Trait Emotional Intelligence Questionnaire Full-Form (TEIQue-FF) Across Countries

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Trait Emotional Intelligence (Trait EI) is conceptualized as a multidimensional and hierarchical construct. However, traditional psychometric models have struggled to fully capture its theoretical complexity. This study proposes a cross-cultural validation of the Trait Emotional Intelligence Questionnaire Full-Form (TEIQue-FF) across British and Italian samples, adopting a bifactor Exploratory Structural Equation Modeling (B-ESEM) framework with oblique rotation. We argue that B-ESEM better reflects the Trait EI conceptualization by simultaneously modeling a latent global factor and allowing correlation among specific domains—features not accommodated by traditional higher-order models. The four first-order factors are treated as correlated dimensions, while Self-Motivation and Adaptability facets load directly onto the global factor, a structure naturally accommodated by bifactor models without imposing constraints typical of higher-order models. The study design includes testing the B-ESEM structure separately in each national sample, followed by Multigroup ESEM to

assess measurement invariance across countries. Data will be collected online via Prolific to ensure sample comparability and data quality. This project addresses a significant gap, as no study to date has examined the B-ESEM structure or tested the cross-cultural invariance of the TEIQue-FF, although similar analyses have been conducted on the short form. By aligning the measurement model more closely with the original theoretical conceptualization, this study aims to enhance the psychometric robustness and cross-cultural generalizability of the TEIQue-FF. Expected findings will have implications for the future operationalization and international application of Trait EI assessment tools. Preliminary findings and methodological considerations will be presented and critically discussed at the Conference.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 2 / 736

Meccanismi di controllo pro-attivo top-down nell'invecchiamento: l'effetto dell'aspettativa del distrattore in adulti giovani e anziani

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Studi condotti su giovani adulti hanno dimostrato che i meccanismi di controllo pro-attivo top-down sono attivi durante compiti di ricerca visiva, anche in assenza temporanea di distrattori (Petilli et al., 2018). Il presente studio indaga se l'invecchiamento influenzi tali processi, esaminando il ruolo dell'aspettativa del distrattore in adulti anziani sani, tramite il paradigma della manipolazione del contesto di distrazione (Distraction Context Manipulation, Marini et al., 2013). Hanno partecipato 127 individui: 62 giovani adulti (18-30 anni; media: 24.4, DS: 2.4) e 65 adulti anziani (64-78 anni; media: 70.1, DS: 3.5). Il paradigma prevedeva tre blocchi di ricerca visiva: un blocco con distrattore presente nel 100% dei trial (DP), uno con distrattore sempre assente (DA) e un blocco misto con distrattore presente nel 50% dei trial.

I risultati hanno mostrato che gli adulti anziani erano più lenti dei giovani, soprattutto nei contesti con distrattori. Tuttavia, non sono emerse differenze significative tra i due gruppi nell'attivazione dei meccanismi di controllo pro-attivo. In particolare, in entrambi i gruppi sono stati osservati costi di aspettativa del distrattore simili nei trial DA del blocco misto, e tale costo risultava ridotto nei trial DP, sia del blocco misto sia del blocco puro.

Questi risultati suggeriscono che i processi di controllo pro-attivo top-down sono conservati nell'invecchiamento sano. Nonostante un rallentamento generale nei tempi di risposta, gli adulti anziani mantengono la capacità di adattare in modo flessibile il controllo attentivo in base al contesto, analogamente ai giovani.

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Lunch and poster 2 / 727

Facing the Mafia in Virtual Reality: Shaping Attitudes, Inspiring Civic Action

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Immersive Virtual Reality (IVR) offers powerful opportunities to simulate complex and ethically sensitive scenarios, enabling profound impacts on individuals' attitudes and behaviors. In this study, we leveraged IVR to address one of society's most deeply rooted problems: the influence of organized crime and -particularly- mafia-like organizations. Using a between-subjects design, 100 participants experienced either a virtual scenario depicting mafia-related activities (experimental condition) or a non-mafia-related crime (control condition). Explicit and implicit attitudes were assessed one week before and immediately after the exposure, through the Attitudes towards Italian Mafias Scale (Schepisi et al., 2023) and a customized Single Category Implicit Association Test (SC-IAT). Behavioral intentions—such as willingness to intervene, report, and testify—were also measured. Results revealed that exposure to mafia-related virtual experiences significantly strengthened negative explicit attitudes toward mafias. However, participants also showed greater hesitation to testify, highlighting the enduring social pressure embodied in the phenomenon of omertà. These findings confirm the potential of IVR not only to reshape attitudes but also to reveal the nuanced psychological barriers to civic engagement, offering new pathways for designing interventions against organized crime.

If you're submitting a symposium talk, what's the symposium title?:

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Lunch and poster 2 / 854

Does Language Shape Numbers? Cross-Linguistic Insights from Vector-Space Models

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Recent evidence suggest that linguistic estimates can predict behavioural performance in number comparison tasks, supporting the idea that data extracted from vector-space models are informative about the mental representation of numbers. The current study investigates whether this phenomenon is specifically related to one's native language and whether it can be replicated in multiple

populations. Across two experiments (one based on an Italian sample and the second one based on a Slovenian sample), we extracted vector representations of number words from participants' native language and from other languages, to test whether native-language-based models better predict performance in symbolic and non-symbolic number comparison tasks. In the first experiment, the Italian-based vector model outperformed the ones based on other languages across symbolic and non-symbolic tasks. Similarly, the second experiment showed that in the Slovenian population, non-symbolic tasks yielded consistent results, and performance in symbolic tasks was closely aligned with the native-language model. Together, these findings support the idea that native language experience plays a key role in shaping numerical representation of both symbolic and non-symbolic information. Further research could explore whether this pattern extends to other linguistic and cultural contexts.

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Lunch and poster 2 / 754

Attachment anxiety and selective spatial attention: a behavioral and ERP investigation

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The potential role of attachment quality in emotion regulation and attention has been frequently discussed. Anxious attachment is associated with hypervigilance toward emotional stimuli while avoidant attachment is characterized by attentional withdrawal. However, there might be a selective attention deficit affecting either the engagement or disengagement components of attentional processing. The present study combines behavioral and electrophysiological measures to investigate the influence of attachment quality on early and late stages of attentional deployment. Participants performed an emotional dot-probe task while EEG activity was recorded to derive event-related potentials (ERPs) associated with attentional resource allocation. Both behavioral and neural responses appeared to be modulated by attachment-related anxiety, assessed using the Experiences in Close Relationships-Revised (ECR-R) questionnaire. At shorter probe duration participants exhibited an altered pattern of attentional orienting towards negative stimuli, with longer reaction times for targets appearing at the same location of negative compared to positive facial expressions. At longer probe duration, we observed reduced inhibition of return (IOR) for negative but not positive stimuli, indicating hypervigilance towards information with negative emotional valence. EEG data revealed greater N2pc deflections elicited by targets following negative emotional cues at shorter probe duration, putatively suggesting increased processing time of negative stimuli. Current preliminary findings suggest that attachment-related anxiety interferes with early and late attentional allocation, advancing our understanding of how attachment quality shapes emotional and cognitive vulnerabilities.

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Lunch and poster 2 / 748

Differenze individuali nella navigazione in ambienti reali: il ruolo delle rappresentazioni corporee interne ed esterne

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Partendo dalle evidenze che sottolineano l'ampia variabilità interindividuale nelle abilità navigazionali ed estendendo il concetto di *embodied cognition* (Goldman & de Vignemont, 2009) alla navigazione umana, l'obiettivo di questo studio è indagare se le differenze individuali nell'elaborazione dello spazio corporeo interno (interocezione) ed esterno possano contribuire a determinare la variabilità interindividuale nell'esecuzione di compiti di navigazione in ambienti reali.

Un campione di 110 giovani adulti sani ($M = 20$ anni; $SD = 3,28$) ha svolto una batteria di prove volte a valutare l'accuratezza, la sensibilità e la consapevolezza interolettiva (*Heartbeat Counting Task*; *Self-Awareness Questionnaire*), compiti di rappresentazione corporea orientata e non orientata all'azione (*Hand Laterality Task*; *Frontal Body Evocation Task*) e prove di conoscenza *landmark*, *route* e *survey* di un ambiente reale.

Le analisi di correlazione rivelano che una più efficiente rappresentazione dello spazio corporeo esterno, sia orientata che non orientata all'azione, è associata ad una conoscenza ambientale di tipo *survey* più accurata. Per quanto riguarda lo spazio corporeo interno, gli individui con una maggiore consapevolezza delle proprie sensazioni interolettive mostrano una minore precisione nel compito di riconoscimento dei *landmark*. Infine, la sensibilità interolettiva risulta associata alla conoscenza ambientale di tipo *route*: nello specifico, gli individui con una maggiore sensibilità per i segnali cardiaci e una ridotta percezione di sensazioni interolettive spiacevoli ripercorrevano il percorso più velocemente.

Questi risultati evidenziano la complessa interazione tra l'elaborazione dello spazio corporeo interno ed esterno e le abilità navigazionali, suggerendo nuove prospettive per interpretare le differenze individuali nella capacità di muoversi realmente nell'ambiente.

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No

Lunch and poster 2 / 733

TAP-COG: Preliminary validation of a tablet-based neuropsychological battery

Author: Denise Mellace¹

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Background

As digital health technologies advance, neuropsychological assessment is undergoing a shift toward more standardized, efficient, and accessible formats. Tablet-based solutions enable automated testing, precise response tracking, and remote delivery—expanding opportunities for early cognitive screening. In this context, we developed TAP-COG, a digital battery for cognitive assessment, and present here its preliminary validation.

Methods

The TAP-COG battery, designed for tablet-based use as a progressive web application, was administered to 80 healthy adults (age, 40.75 ± 17.72 ; education, 15.23 ± 3.2 , 58.75% female). The battery includes five subtests: Reaction Time (RT), Go/No-Go, Visual Recognition Test (VRT), Simon Test, and Interference Test. Usability was assessed using the System Usability Scale. Non-parametric analyses were performed to examine construct validity by comparing performances between computerized and paper-based tests and associations with demographic variables.

Results

Correlation analyses revealed moderate positive correlations between RT and Trail Making Test-A ($r_s = .40$, $p < .001$); Go/No-Go and Stroop ($r_s = .35$, $p < .001$); VRT accuracy and Immediate Visual Memory test ($r_s = .57$, $p < .001$). Age was associated with slower reaction times in RT and Go/No-Go ($p < .001$), and with lower VRT accuracy ($p = .009$). Education correlated with faster Go/No-Go reaction times ($p = .008$) and higher VRT accuracy ($p = .012$). A sex effect was observed only in Go/No-Go ($p = .016$). Usability was rated from good to excellent by 80% of participants, regardless of age, education, and cognitive efficiency.

Conclusions

This study suggests high perceived acceptability of the TAP-COG battery and provides preliminary support for its construct validity. Further research with larger samples and the establishment of normative data is needed to confirm its clinical applicability.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 2 / 676

Raccolta di evidenza empirica delle proprietà psicometriche dello Strumento di Osservazione del Potenziale Indire (SOPI) in un campione di docenti italiani.

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Co-authors: Michela Zambelli²; Sara Mori³; Giulia Perasso¹; Jessica Newint-Gori³; Alessia Rosa³; Semira Tagliabue²; Margherita Lanz⁴

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Per sviluppare il potenziale degli studenti mediante percorsi didattici e formativi personalizzati, è importante disporre di strumenti in grado di rilevare le configurazioni di interessi, potenzialità e attitudini di ogni individuo. Per rispondere a tale obiettivo è stato sviluppato lo strumento SOPI, volto a misurare il potenziale degli studenti in nove domini (verbale, logico-matematico, corporeo, naturalistico, esistenziale, interpersonale, intrapersonale, visivo, musicale), tramite l'osservazione del livello di *abilità* ed *interesse* mostrato dallo studente durante attività educative e relazionali. Questo contributo presenta l'esito dello studio di validazione del SOPI in un campione di docenti italiani.

Evidenza di validità di contenuto è stata raccolta coinvolgendo sei ricercatori e insegnanti che hanno valutato comprensibilità, applicabilità e adeguatezza del SOPI a rilevare il potenziale negli studenti. Evidenza di validità di costrutto, convergente e discriminante, è stata ottenuta somministrando a 391 docenti da 19 regioni italiane il SOPI nelle sue tre versioni (4-7 anni; 8-13 anni; 14+ anni). Tra questi, 344 docenti hanno partecipato in coppia osservando lo stesso studente. I punteggi dei 18 indicatori del SOPI sono distribuiti normalmente e mostrano fra di essi correlazioni positive controllando per diade e scuola. La validità convergente è supportata da correlazioni positive con il Multiple Intelligence Inventory; la validità discriminante da correlazioni residuali/nulle con comportamenti problematici dello Strengths and Difficulties Questionnaire. Infine, un moderato accordo inter-giudice è stato riscontrato tra le valutazioni delle coppie di docenti, a sottolineare le potenzialità di utilizzo del SOPI per valorizzare il punto di vista collegiale di docenti diversi sullo stesso studente.

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Lunch and poster 2 / 819

Fliturns of Adolescent Swimmers Psychological (in)Flexibility: An Idiographic study with DNA-V

Author: Matteo Chies¹

Co-authors: Stefano Mastino¹; Giovanna Pignatelli²; Claudio Mulatti²

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Background

Psychological flexibility is a key factor in athletic performance and well-being. This study investigates the effects of a DNA-V training on Italian adolescent competitive swimmers, focusing on the development of psychological flexibility and its impact on motivation and resilience in training and competition.

Method

This idiographic longitudinal study involved four athletes (aged 13, 14 and 16). Participants engaged in a 12-session DNAV training program (60-minute sessions over six months), including in-water practice. Weekly self-report questionnaires assessed psychological flexibility, DNAV-related skills, motivation, and sport resilience during training and post-competition, aimed to compare psychological flexibility in both contexts.

Results

Functional analysis suggests that one athlete overcame his initial performance-related difficulties, demonstrating increased flexibility in self-perception after the Values and Discoverer-based training sessions. The other three participants exhibited more inflexible Adviser. Over time, they also showed improvements in psychological flexibility. All participants displayed strong Noticer skills but exhibited higher commitment to their goals rather than to their values.

Discussion

DNAV-based training may be an effective approach to enhancing psychological flexibility in competitive swimming. A context-specific training protocol will be presented.

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No

Lunch and poster 2 / 796

Verb-Noun-Adjective Interactions in Sensorimotor Integration During Language Processing**Author:** Gioacchino Garofalo¹**Co-authors:** Lucia Riggio²; Jeffrey Opoku Dickson¹; Francesco Bianchini¹; Elena Gherri¹¹ *Università di Bologna - Dipartimento di Filosofia*² *Dipartimento di Medicina e Chirurgia - Unità di Neuroscienze***Corresponding Author:** gioacchino.garofalo@unibo.it

Previous research has shown that motor plans related to hand-object interactions are activated during the semantic processing of graspable object nouns. Adjectives expressing object features can modulate these motor plans, indicating sensorimotor integration. The present experiment investigated the role of verbs in this noun-adjective integration. Each trial began with a verb presented at the centre of the screen for 250ms and indicating either a hand movement ('prendi', grasp) or an eye movement ('guarda', look). This was replaced by a graspable object noun (250ms), and then by an adjective describing positive (e.g., round) or negative (e.g., sharp) manipulative features (250ms). Participants (N=32) performed a reach-to-grasp compatibility task, categorizing the object noun (artifact vs. natural) using either a power or a precision grip that either matched or mis-matched the typical grip associated with the object. Results showed that both verbs and adjectives influenced sensorimotor processing evoked by nouns. A grasp-compatibility effect (GCE) emerged with positive adjectives, while the GCE reversed with negative adjectives. Crucially, the GCEs emerged when the noun was preceded by a hand-action verb, but not after an eye-action verbs. Additionally, negative adjectives consistently increased response times across all conditions. These findings demonstrate that the sensorimotor system is automatically engaged during sentence processing, even when verb and adjective information is irrelevant to the task. This provides new evidence for embodied language processing, highlighting the integration of linguistic elements in shaping motor responses.

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Lunch and poster 2 / 815

Stimolare il potenziale di apprendimento attraverso il problem-solving: primi dati di efficacia del programma SWIFT**Author:** Grazia Cerullo¹**Co-authors:** Alexandra Hering²; Fabio Le Piane³; Franca Stablum¹; Giovanna Mioni¹; Matthias Kliegel⁴; Mauro Gaspari³; Nicola Ballhausen²; Sabrina Cipolletta¹¹ *Dipartimento di Psicologia Generale, Università di Padova*² *Department of Developmental Psychology, University of Tilburg*³ *Dipartimento di Informatica, Scienza e Ingegneria, Università di Bologna*⁴ *University of Geneva***Corresponding Author:** grazia.cerullo@unipd.it

È ormai consolidato come la variabilità interpersonale e intrapersonale, in termini di funzionamento cognitivo ed emotivo, aumenti all'avanzare dell'età. Questa variabilità potrebbe evidenziarsi anche nel margine di miglioramento che può derivare da interventi di stimolazione cognitiva, soprattutto rivolti a competenze più complesse ed essenziali al mantenimento dell'autonomia funzionale.

SWIFT (Shared, Web-based, Intelligent, Flexible Training) * è un nuovo programma di training cognitivo computerizzato che ha lo scopo di stimolare le capacità di problem-solving e pianificazione. È in corso uno studio per verificare l'efficacia di SWIFT e analizzare ritmi e modalità di apprendimento. Un gruppo di 30 anziani sani (età 65-85 anni) ha eseguito un percorso di training. Il training comprendeva 2 sessioni a settimana per un totale di 10 sessioni, in cui i partecipanti avevano il compito di pianificare un fine settimana fuori città, ponderando strategie di azione, in base ad obiettivi prestabiliti e vincoli temporali stringenti.

I risultati hanno evidenziato negli anziani un discreto margine di miglioramento nell'articolare piani d'azione sempre più complessi.

Le caratteristiche individuali che sembrano concorrere a questo margine di miglioramento sono il livello cognitivo iniziale e la familiarità tecnologica: infatti, sono emerse correlazioni positive significative con il grado di difficoltà raggiunto al termine del training.

Inoltre, è interessante evidenziare la correlazione positiva tra il grado di difficoltà raggiunto e il grado di miglioramento in test di pianificazione e problem-solving.

Questo dato può essere considerato una prima validazione dell'efficacia di SWIFT.

*Il progetto è finanziato da Velux Stiftung Foundation.

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Lunch and poster 2 / 805

Effetti dell'ascolto musicale su attenzione ed ansia: modulazione della P300 e dei tempi di reazione in un paradigma oddball

Authors: Giovanna Puccio¹; Silvia Moro²; Edoardo Passarotto³; Gabrielvincenzo Apicella⁴; Emanuela Formaggio³; Francesco Piccione³; Maria Rubega³; Rossana Gesuato⁴; Stefano Masiero³; Vincenzo Soravia⁴

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Introduzione:

L'ascolto della musica sembra influenzare l'attivazione delle reti cerebrali coinvolte nei processi emotivi e cognitivi, modulandone la risposta. La componente P300 dei potenziali evento-correlati (ERP), ottenuta da un paradigma "oddball" uditivo, rappresenta un indicatore neurofisiologico utile per studiare le risorse attentive.

Metodo:

La P300 è stata elicitata con un paradigma oddball uditivo di discriminazione tra due differenti classi di stimoli, distinti in 40 devianti (500Hz) e 160 frequenti (1000Hz) prima e dopo l'ascolto di dieci brani musicali. Dodici partecipanti sani (24-43 anni, 58% femmine) sono stati istruiti a premere due diversi tasti per distinguere le due classi di stimoli. Sono stati acquisiti i segnali elettroencefalografici (EEG, 64 canali; eego sports system, ANTNeuro, fs=500 Hz) e i tempi di reazione prima e dopo l'ascolto musicale. I livelli di ansia di tratto (STAI-Y2) sono stati utilizzati per classificare il campione in gruppi ad alta e bassa ansia.

Risultati:

Nella condizione pre-ascolto, i soggetti ad alta ansia mostravano ampiezze ridotte in Cz (3.46µV; ~52%) e latenze anticipate in Pz (~103ms) della componente P300, differenze che si attenuavano dopo l'ascolto musicale. Infine, dai dati comportamentali è emersa un'interazione significativa tra i tempi di acquisizione (prima e dopo ascolto) e la classe di stimolo (frequenti VS devianti; $F(1,10)=6.938$; $p=.025$), evidenziando una riduzione nei tempi di reazione per gli stimoli frequenti dopo l'ascolto musicale.

Conclusioni:

I risultati suggeriscono che l'ascolto della musica può modulare le caratteristiche della P300, normalizzando le alterazioni cognitive che sembrerebbero associate all'ansia di tratto e migliorando l'efficienza attentiva.

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No

Lunch and poster 2 / 781

Specific hypnotizability-related EEG signatures of motor imagery

Authors: Eleonora Malloggi¹; Enrica Laura Santarcangelo²

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Background and objective: Motor imagery (MI) can improve motor performance and counteract neurological impairment, although its effectiveness varies across individuals according to hypnotizability levels. The study investigated whether not only highly hypnotizable (highs), but also medium (mediums) and low hypnotizable individuals (lows) can improve their actual and imagined motor performance through MI training (MIT).

Methods: Participants underwent EEG during baseline (B), movement (M) and MI (kinesthetic, K; visual, V), repeated after 2-week, 2-month MIT, and 1 month post-interruption (S1-S4). Power spectral density (PSD) was computed for theta, alpha, mu, low- and high-beta rhythms. Subjective MI efficacy (Ke, Ve) and chronometric indices (CI) were recorded.

Results: All participants improved their MI across the four sessions. Significant Session×Modality interaction revealed that Ve increased after training and survived its interruption, whereas Ke decreased. CI Session×Modality showed greater Ve than Ke in S1. Significant Session×Task emerged for mu, theta, alpha, and low-beta. Theta Side×Task×Group showed no effects in highs, efficient V in lows, and right-side activation without imagery efficacy in mediums. Low-beta Side×Task×Group showed V and K<B and no differences between V and M in highs. High-beta Session×Group showed lows<mediums in S2 and highs<mediums in S3.

Discussion: MIT was effective on Ve and PSD independently from hypnotizability and its effects were maintained after MIT interruption. Independently from subjective and behavioral variables, theta and low-beta reflected hypnotizability-related differences in lateralization and task performance. High-beta highlighted between-group differences in MIT effects, with mediums -70% of population- showing lower task engagement. This indicates that not only highs can benefit from MIT.

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No

Lunch and poster 2 / 637

Effetti dell'Attribute Framing sull'accettazione di una tecnologia di body scanning: evidenze da uno studio sperimentale

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L'industria del fast fashion contribuisce in modo significativo al cambiamento climatico, sfruttando enormi quantità di risorse naturali (Mukherjee, 2015; Niinimäki, 2020). La moda on demand sta emergendo come alternativa sostenibile perché prevede la produzione dei capi solo su ordinazione. Le tecnologie di scansione del corpo svolgono un ruolo chiave in questo processo, permettendo ai consumatori di visualizzare i vestiti su avatar modellati sulle loro misure corporee. Questa tecnologia consente alle aziende di produrre esclusivamente i capi richiesti, riducendo la sovrapproduzione e l'inquinamento derivante dai resi. Questo studio preregistrato ha esaminato l'accettazione, da parte dei consumatori italiani, di una tecnologia di scansione del corpo. L'obiettivo era comprendere se presentare la tecnologia evidenziandone gli aspetti sostenibili (condizione di sostenibilità) o premium (condizione premium) potesse influenzarne l'accettazione rispetto a una presentazione tecnica e neutra (condizione di controllo). I risultati mostrano una differenza significativa tra il gruppo di controllo e i gruppi sperimentali. In particolare, l'età dei partecipanti modera l'effetto della condizione: all'aumentare dell'età, cresce l'accettazione della tecnologia nelle condizioni sperimentali, soprattutto in quella sostenibile, mentre nella condizione di controllo l'accettazione diminuisce. Questi risultati sono particolarmente rilevanti perché evidenziano come la presentazione di questa tecnologia, con un frame sostenibile o premium, influenzi l'accettazione in base alla fascia d'età. Di conseguenza i risultati suggeriscono la necessità di targettizzare i consumatori in base all'età al fine di facilitare l'adozione di queste nuove tecnologie e guidare i consumatori in maniera efficace verso scelte di moda più sostenibili.

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Lunch and poster 2 / 743

The role of Task Set Inhibition in Cued and Voluntary Task Switching

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Task set inhibition consists of actively suppressing interference from recently executed tasks. Previous research has demonstrated that returning to a previously abandoned task (e.g. ABA) is more difficult than switching to less recently performed tasks (e.g. CBA) in terms of slower reaction times (RTs) and higher error rates. Though consistently observed in cued task-switching paradigms, it remains elusive whether this mechanism operates during voluntary task selection. To fill this gap, we investigated the potential overlap of the processes underlying task set inhibition in both cued and voluntary task switching.

Thirty-six participants performed two task-switching paradigms. In the cued version, participants were required to switch between three tasks (parity, size, distance) according to the presented cue. In the voluntary version, participants chose randomly which of these three tasks to perform, avoiding consecutive repetitions.

Preliminary results from the voluntary switching paradigm revealed slowest RTs for the distance task and fastest for the parity task. Additionally, slower RTs for ABA than after CBA sequences. No interaction effect was found between task and sequence. Complementarily, the choice proportion of ABA sequences was lowest for the distance and highest for the parity tasks. Relatedly, in the cued version ABA RTs were slower than CBA RTs and RTs for the distance task slower than those

for the other two tasks. Different cross-paradigm correlation patterns of task-dependent inhibition were observed.

These preliminary findings highlight task set inhibition features in cued and voluntary task switching paradigms. Further research could focus on generalizing findings to different settings and populations.

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Lunch and poster 2 / 749

Lo spazio del corpo e della navigazione in età adulta: un confronto tra giovani adulti e anziani sani

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Sebbene siano state distinte diverse tipologie di spazio (Tversky et al., 1999), gli studi presenti in letteratura hanno prevalentemente indagato lo sviluppo di ciascuna dimensione spaziale separatamente. Pertanto, questo studio intende esaminare, all'interno dello stesso campione, l'elaborazione dello spazio navigazionale e dello spazio corporeo interno ed esterno, confrontando giovani adulti e anziani.

Lo studio ha coinvolto 87 partecipanti sani, suddivisi in 50 giovani adulti (M = 20,62 anni; DS= 2,11) e 37 anziani (M = 61,03 anni; DS=7). Tutti i partecipanti hanno completato una batteria di compiti valutanti: (i) lo spazio corporeo interno, tramite la misura di accuratezza interocettiva (IAcc, *Heart-beat Counting Task*); (ii) lo spazio corporeo esterno, mediante compiti di rappresentazione corporea orientata all'azione (RCoa, *Hand Laterality Task*) e non orientata all'azione (RCNoa, *Frontal Body Evocation Task*); (iii) lo spazio navigazionale, attraverso prove di conoscenza *landmark*, *route* e *survey* di un ambiente virtuale. Le analisi dei dati evidenziano differenze significative tra i due gruppi: infatti, mentre gli anziani mostrano livelli più elevati di IAcc, i giovani adulti presentano prestazioni migliori nei compiti di RCoa, RCNoa e nelle prove di conoscenza spaziale di tipo *route* e *survey*, sia in termini di accuratezza che di tempo di risposta.

Questi risultati preliminari suggeriscono un'evoluzione differenziata delle diverse componenti spaziali con l'avanzare dell'età: infatti, se da un lato l'efficienza nell'elaborare lo spazio corporeo esterno e lo spazio navigazionale tende a ridursi, dall'altro, l'elaborazione dello spazio corporeo interno migliora, riflettendo una maggiore capacità di sintonizzarsi sui propri segnali corporei durante l'invecchiamento.

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No

Lunch and poster 2 / 864

CORRELATI NEURONALI DEL COMPORTAMENTO DI AVVICINAMENTO (CLOSING-IN): UNO STUDIO FNIRS SU SOGGETTI SANI

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Introduzione. Il comportamento di avvicinamento (CA; closing-in, in ambito clinico) si verifica quando, durante un compito di copia, ci si avvicina al modello per replicarlo. Questo fenomeno, osservabile anche in individui sani in condizioni di doppio compito (Sagliano et al., 2013), suggerisce un legame con il sovraccarico delle funzioni di controllo frontale. Tuttavia, i correlati cerebrali delle attività costruttive e del CA non sono stati ancora esplorati a fondo. Questo studio utilizza la Spettroscopia Funzionale nel Vicino Infrarosso (fNIRS) per analizzare l'attivazione cerebrale nelle aree frontali e parietali durante il compito di copia.

Metodi. Quarantanove partecipanti sono stati assegnati a una di due condizioni: copia semplice (CS, n=23) o copia con doppio compito (DC, n=26). I partecipanti ricopiavano 9 linee di Luria di complessità variabile, con il CA misurato tramite la distanza minima tra modello e riproduzione. Una condizione di controllo prevedeva il ricalco di linee simili. In funzione del comportamento di avvicinamento, sono stati suddivisi i partecipanti in due gruppi (con CA e senza CA).

Risultati. I partecipanti con CA (n=24) mostravano maggiore attivazione bilaterale delle aree frontali e della parietale destra durante la copia rispetto al controllo. Nei partecipanti senza CA (n=25), si osservava maggiore attivazione della parietale sinistra e della frontale destra. Non sono emerse differenze significative tra i gruppi CS e DC.

Discussione. I risultati suggeriscono che il CA potrebbe derivare da uno squilibrio funzionale tra le regioni frontali e parietali dei due emisferi, in linea con quanto proposto da Conson et al. (2009).

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Lunch and poster 2 / 773

Cognitive load and pain relief: a systematic review on the relationship between working memory and acute pain

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The IASP definition of pain emphasizes its subjective nature, highlighting its multidimensionality. Pain signals potential harm to the body and, due to its negative emotional impact, can attract attention and mobilize resources to deal with the threat. Managing pain thus requires a strong cognitive component, as evidenced by the overlap between neural systems involved in pain management and executive functioning. Specifically, the executive function of working memory plays a pivotal role. According to the neurocognitive model of attentional selection proposed by Legrain et al. (2009), pain can influence working memory performance through bottom-up processes. Additionally, the model suggests that working memory may modulate pain perception through top-down processes. The present systematic review aims to elucidate the empirical evidence regarding this bidirectional relationship.

It was conducted according to the PRISMA method and registered and approved on the PROSPERO website; 49 studies investigating the bidirectional relationship between acute pain and working memory in healthy adults were included. Substantial agreement emerged that pain can worsen cognitive performance by acting as a distractor and that being engaged in a cognitive working memory task can reduce perceived pain. However, some studies show mixed results, probably due to the variety of the cognitive load of the task and the methodology of pain induction. These results may offer valuable insights into the daily functioning of individuals afflicted with chronic pain and could facilitate pain management strategies in nonpharmacological pain treatment.

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No

Lunch and poster 2 / 732

Which Biomarker-Based Diagnostic Algorithm for Functional Motor Disorders? Investigating Motor, Exteroceptive, And Interoceptive Domains Through Artificial Intelligence Analysis

Authors: Angela Sandri¹; Marialuisa Gandolfi²; Ilaria Antonella Di Vico¹; Mirta Fiorio²; Giulia Pedrotti²; Anna Paolicelli¹; Paolo Barone³; Maria Teresa Pellecchia³; Roberto Erro³; Sofia Cuoco⁴; Immacolata Carotenuto⁴; Michela Russo⁵; Claudia Vinciguerra⁴; Annibale Botto⁴; M Amboni⁴; Giancarlo Mansueto²; Francesca Benedetta Pizzini²; A Tamanti²; Marco Barillari²; Matteo Francesco Lauriola¹; Maria Chiara Tozzi¹; Francesca Rusciano¹; Christian Geroi²; Melania Fasoli²; Angela Marotta²; Emanuela Pizzolla²; Francesca Salaorni²; Irene Lozzi²; Federica Bombieri²; Giovanna Maddalena Squintani¹; Sara Mariotto¹; Stefano Tamburin²; Fabio Paio²; G De Biasi⁴; G Piscosquito⁴; Lucia Zenere⁶; Andrea Gardoni⁷; Silvia Basaia⁶; Elisa Canu⁶; Elisa Sibilla⁶; Massimo Filippi⁶; Elisabetta Sarasso⁶; Federica Agosta⁶; Michele Tinazzi²

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Introduction: Functional Motor Disorders (FMD) is yet poorly understood, with inconsistent limb weakness, tremors, dystonia, and gait disturbances. Delayed diagnosis and inadequate treatment lead to severe disability. Predictive coding theories suggest symptoms stem from disrupted neural circuits integrating interoception, exteroception, and motor control, distorting bodily perceptions.

Objective: To develop a biomarker-based diagnostic algorithm by modeling behavioral, neurophysiological, and MRI biomarkers.

Methods: A cross-sectional study was conducted in a preliminary sample of 50 FMD patients and 50 matched healthy controls (HC). Biomarkers were assessed in motor, exteroceptive, interoceptive domains. The diagnostic algorithm was developed by explainable artificial intelligence (XAI) methods. European Union funded the study (PNRR-MAD-2022-12376826).

Results: FMD exhibited higher levels of depression, anxiety, alexithymia, pain, fatigue, and lower quality of life (all $p < 0.05$). Univariate analysis revealed a more negative cognitive dual-task effect on sway area ($p = 0.003$) and gait speed ($p = 0.033$) in FMD, indicating postural stability improvement

but not in gait performance during a cognitive dual-task. Lower R2 blink-reflex magnitude ($p=0.036$) and increased ratio of HNCS to basal for N2/P2 laser-evoked potential amplitude in the lower limb ($p=0.029$) suggest impaired sensorimotor integration and descending pain modulation. Higher proprioceptive error ($p=0.037$) indicates an overestimating limb position in FMD. MRI findings showed increased left pallidal volume ($p=0.034$), functional connectivity within Basal Ganglia ($p=0.004$), and ventral Default Mode ($p=0.001$) networks in FMD. The diagnostic algorithm achieved 86.6% accuracy.

Conclusions: Motor and exteroceptive biomarkers might refine FMD diagnosis and therapeutic strategies, along with abnormal interactions between motor control circuits and emotional processing networks.

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Lunch and poster 2 / 918

Shifting the Body Midline: The Impact of Visuomotor Illusions in Virtual Reality on Peripheral Autonomic Activity

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A coherent sense of body ownership relies on the integration of top-down and bottom-up sensory signals. Disrupting the coherence of these signals through experimental manipulations (e.g., the rubber hand illusion or mirror box illusion) has been shown to affect body representation and peripheral physiological activity, such as body temperature. However, recent studies have debated these findings. To further investigate the relationship between coherent body representation and physiological state, we developed an innovative paradigm designed to alter body-centered representation during a visuomotor task in virtual reality. Participants ($n = 24$) engaged in a 15-minute visuomotor task in which they used their right hand to manipulate a virtual cube with a stick. In the congruent condition, the virtual hand matched the actual right hand. In the incongruent condition, the right hand was visually replaced with a virtual left hand, inducing a shift in the perceived body midline. We measured the temperature of the unused left hand before (baseline) and during the task. Additionally, in the middle of the task, we recorded skin conductance responses to supra-threshold electro-cutaneous stimulations. Our results revealed a significant reduction in left-hand temperature in the incongruent condition compared to the congruent one. Moreover, SCR amplitude was positively correlated with temperature changes—greater cooling was associated with diminished responses, while higher temperatures predicted stronger SCRs. Overall, our findings demonstrate that body illusions disrupting the coherent body reference frame can induce changes in the physiological state, strengthening the link between body representation and peripheral body signals

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No

Lunch and poster 2 / 539

Trust in AI Under Pressure: Effects of Cognitive Load and Content Domain

Authors: Christian De Marco¹; Allegra Indraccolo¹; claudia de gatto¹; ilenia lanni²; Riccardo Brunetti¹

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Intro: The rapid evolution of artificial intelligence (AI), particularly large language models (LLMs), is transforming numerous aspects of daily life, with these tools increasingly used as sources of information and problem-solving.

Method: This study aims to investigate the general level of trust people place in AI-generated responses, examine whether this trust varies depending on the thematic content, and assess the effect of cognitive load on such trust. To this end, a between-subjects experimental design was adopted with two groups: high vs. low cognitive load. All participants were presented with 36 multiple-choice quandaries divided into three thematic categories: 12 related to entertainment decisions (film, music, books), 12 concerning practical decisions (legal, financial, medical domains), and 12 focused on moral decisions (choosing between options that have both positive and negative ethical consequences). For each question, participants could choose between a response attributed to an AI system, expert in the given topic, or a response attributed to a human expert in the same field. The responses were marked as generated by AI randomly. In the high cognitive load group, participants were asked to memorize an 8-digit string before each dilemma and recall it after making their choice; this requirement was not present in the low cognitive load group.

Results: The ANOVA results show that cognitive load significantly affects the level of trust placed in AI, with increased trust observed among participants exposed to higher cognitive load. Future research could further explore the effect of cognitive load in complex decision-making contexts.

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No

Lunch and poster 2 / 810

Numbers in the brain: How linguistic experience shapes the neural representation of numbers

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The nature of numerical representations, whether abstract and notation-independent, still sparks a fervent debate in the numerical cognition field. Recent behavioral evidence using distributional semantics have challenged the abstract coding view, showing that linguistic experience accounts for notation-dependent distance effects. This study examines whether linguistic priors also account for neurophysiological responses, using EEG in healthy adults.

EEG data from 64 channels were recorded while participants completed three tasks: (1) passive viewing of single digits, (2) sequential number comparison, and (3) simultaneous number comparison. Representational Similarity Analysis (RSA) was used to determine whether neural patterns align with predictions from distributional semantic models. Preliminary analyses replicate the behavioral

pattern observed in previous studies, with linguistic priors predicting performance better than real numerical distance. Importantly, EEG patterns also align better with the linguistic distribution of numbers. Behavioral results confirm that. These findings challenge the amodal representation of numbers, calling in turn for more comprehensive accounts integrating the role of experiential priors.

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No

Lunch and poster 2 / 769

Effetti dei meccanismi di orientamento attentivo e di programmazione motoria nell'attenzione visuospatiale

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I processi di orientamento garantiscono all'individuo di spostare l'attenzione nello spazio al fine di analizzare selettivamente e rispondere a stimoli esterni. L'attività di tali meccanismi facilita la creazione di un programma motorio anticipatorio, aumentando la prontezza ad agire e riducendo i tempi di risposta (TR) a stimoli che si presentano nella posizione attenzionata. Il presente studio ha l'obiettivo di discriminare, attraverso un task comportamentale, la componente motoria da quella attenzionale nei processi di orientamento attentivo, osservandone ortogonalmente gli effetti sui tempi di risposta nello stesso disegno fattoriale.

È stata somministrata ad un gruppo di 30 volontari sani una versione modificata del Posner task avente una freccia target orientata verso destra o verso sinistra e presentata nella parte alta o bassa dello schermo, la cui direzione doveva essere discriminata. Un cue esogeno costituito da una freccia e precedente al target, poteva apparire nella stessa (Valida) od opposta (Invalida) posizione dello schermo, elicitando un orientamento attentivo, oppure apparire in entrambe le posizioni (Neutra). Inoltre, la freccia cue poteva essere orientata nella stessa (Congruente) od opposta (Incongruente) direzione della freccia target, elicitando una programmazione motoria, oppure costituire uno stimolo non orientato (Nessuna Direzione).

Dai risultati emergono TR maggiori nei trial Invalidi-Congruenti rispetto Validi-Congruenti e TR maggiori nei trial Validi-Incongruenti rispetto Validi-Congruenti, ovvero quando è necessario, rispettivamente, solo ri-orientamento attentivo e solo ri-programmazione motoria. L'assenza di differenza tra trial Neutri-Congruenti e Validi-Nessuna Direzione suggerisce, infine, che tali processi cognitivi contribuiscano equamente nel vantaggio fornito ai TR nel rispondere in un punto attenzionato.

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Lunch and poster 2 / 829

Benefits of Butterfly Tapping on Emotional Reactivity and State Anxiety: an ERP Study in University Students

Author: Margherita Filosa¹

Co-authors: Camilla Panacci¹; Luca Boccacci¹; BiancaMaria Di Bello¹; Andrea Casella¹; Merve Aydin¹; Francesca Strappini¹; Sabrina Pitzalis¹; Francesco Di Russo¹

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Introduction: The ability to regulate emotional responses is essential for university students, frequently exposed to high-levels stressors that affect their well-being and cognitive functioning. Butterfly Tapping (BT) is a self-administered form of bilateral alternating stimulation, originally introduced in clinical settings to promote emotional regulation. Despite its clinical relevance, its neurophysiological effects remain poorly explored.

The study investigated the effects of BT on emotional reactivity and state anxiety, measured by changes in LPP amplitude.

Methods: EEG was recorded at T0 and T1 while participants performed an Emotional Simple Reaction Time (E-SRT) task, involving negative and neutral images. Different image sets were used at T0 and T1. Thirty-two healthy, right-handed university students (age 18–40) were randomly assigned to the experimental or the control group. Between sessions, the experimental group performed 15 minutes of self-administered BT, while the control group maintained the same crossed-hands posture without tapping. State anxiety (STAI-Y1) and emotional discomfort (VAS) were assessed. The LPP was calculated as the difference between ERPs elicited by negative and neutral stimuli.

Results: The experimental group showed a significant reduction in LPP differential amplitude from T0 to T1 ($p = .018$), whereas no significant changes were observed in the control group. Furthermore, self-report measures suggested a non-significant trend toward reduced anxiety and discomfort following BT.

Discussion: These findings provide preliminary neurophysiological evidence that BT may facilitate emotional regulation by attenuating cortical responsiveness to negative stimuli. Furthermore, the effect persisted despite the use of novel images, suggesting a generalized reduction in emotional reactivity.

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No

Lunch and poster 2 / 933

Involvement of the mirror and the mentalizing system during self-directed and other-directed communicative intentions. An sLORETA study.

Authors: Elisabetta Ferrari¹; Sandro Rubichi¹; Cristina Iani²; Cristina Becchio³; Livia Colle⁴; Henrik Walter⁵; Francesca Patarini⁶; Jlenia Toppi⁷; Angela Ciaramidaro¹

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Background:

Recognizing others' intentions is pivotal for social interaction and involves the mirror neuron system (MNS) and the mentalizing system (MENT). Yet the organization and interaction of these systems during self- versus other-directed action observation are not fully understood. EEG research associates MNS activity with mu rhythms (alpha: 8–13 Hz; beta: 15–20 Hz) and has revealed distinct activations in key MNS and MENT regions across various EEG bands during self-involved social motor tasks. Using EEG source localization, this study explores MNS and MENT involvement during action observation, expecting mu suppression in MNS areas and greater MNS and MENT recruitment during self-directed communicative actions.

Methods: During 64-channel HD-EEG recordings, 35 participants watched video clips of communicative or private intentions as well as other-directed and self-directed intentions (task adapted from a previous fmri study). We used sLORETA to compute cortical 3D distribution of neuronal activity. Power spectral density (PSD) was averaged in five frequency bands: theta, lower and upper alpha/beta bands. We compared communicative and private intentions PSD values to obtain spectral activation maps.

Results: Activity elicited in theta and lower alpha bands revealed a different pattern of activation related to the kind of intention. Within self-directed perspective communicative actions showed significantly greater desynchronization in mentalizing regions than private intentions. Comparisons within communicative intentions (self-directed vs other-directed) revealed a larger desynchronization in MENT regions and in the anterior part of the MNS respectively (theta).

Conclusion:

Theta and lower alpha modulation suggest their implication during integration of socially salient information and intentions' discrimination.

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Lunch and poster 2 / 753

Promoting Open Science in Psychology: The Development of an Operational Checklist to Support Authors in Adopting Open Practices

Authors: Rossella Caliciuri¹; martina gnerre¹; ilaria telazzi²

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Open Science (OS) seeks to make scientific research more accessible, transparent, and reproducible by promoting practices such as open data and open methods. However, despite the growing importance of these practices, there is currently no comprehensive tool to systematically assess the extent to which research studies adhere to OS principles. The aim of this study was to develop an operational checklist to support authors in adopting Open Science practices within the field of psychology. To this end, we began by systematically reviewing existing OS literature to comprehensively gather and synthesize available guidelines, recommendations, and best practices. Out of 461 studies initially identified, 140 studies were included following PRISMA recommendations. We identified and organized the main themes emerging from the current literature (e.g., reproducibility and multi-lab collaboration). For each identified theme, we mapped specific, actionable practices, ensuring that these were clearly defined and aligned with the best practices in the field. For example,

under the theme of reproducibility, we outlined essential practices such as the open sharing of analysis code, data sharing, and preregistration of studies. Additionally, we accounted for the nuances in different research designs by tailoring practices to the specific needs of qualitative and quantitative studies.

In conclusion, based on the findings from the systematic review, this study provides a clear and actionable tool to assess and promote the adoption of OS practices in psychology. By offering clear and practical guidance, the checklist aims to support researchers in implementing transparent, reproducible, and accessible research practices in the field.

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No

Lunch and poster 2 / 632

SopravVivi con te stesso nell'era Smartphone

Authors: Laura Coco^{None}; Leonardo Noto^{None}; Andrea Buscemi^{None}; Donatella Di Corrado^{None}; Marinella Coco¹

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L'uso eccessivo dei social network, l'essere sempre connessi, rappresenta un problema crescente in tutto il mondo. Un termine che si è recentemente imposto nel mondo scientifico è "nomofobia". "Nomo" è l'abbreviazione di "no mobile", termine che i ricercatori britannici hanno utilizzato per descrivere il terrore di non essere raggiungibile al cellulare. La dipendenza da smartphone implica notevoli rischi per la salute fisica, psichica e cognitiva dell'individuo.

Scopo della presente ricerca è quello di indagare e monitorare il fenomeno della dipendenza dai social network e dello smartphone sulla popolazione studentesca universitaria, osservando le possibili ricadute sulle componenti emotive. Il campione esaminato è composto da 255 docenti iscritti al corso TFA e da 135 studenti universitari (corsi di laurea in scienze e tecniche psicologiche e informatica). Ai partecipanti è stata somministrata una batteria di test al fine di valutare: l'autostima (Basic Self-Esteem Scale), l'autoefficacia (Di Nuovo e Magnano), l'ansia (STAI-Y), l'intelligenza emotiva (Self-Report Emotional Intelligence Test), lo stress (MSP-9), le strategie di coping: (COPE-NVI-60), la dipendenza da internet (Internet Addiction Test), la nomofobia (NMP-Q versione italiana).

I risultati ottenuti mostrano come il campione si collochi su un livello moderato di nomofobia e come esso influenzi negativamente le componenti emotive. Si rende pertanto necessario proporre degli interventi specifici al fine di ridurre gli effetti negativi e le ricadute che l'uso dello smartphone oggi ha sul benessere psicofisico e cognitivo della popolazione studentesca.

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Lunch and poster 2 / 738

Step by Step into Nature: A Multiple Single-Case Study Exploring the Effect of Walking on Mood in Older Adults

Authors: Elisabetta Ricciardi¹; Rosa Napoletano²; Claudia Mirengi³; Alessandro Oronzo Caffò⁴; Andrea Bosco⁵; Giuseppina Spano⁶; Antonella Lopez⁷

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Nature-based solutions (NBS), such as urban parks and large flowerbeds, are increasingly recognized for promoting human health by enhancing physical and mental well-being. Accessible natural environments can encourage physical activity, such as nature-based walking, supporting mental health, especially among older adults. However, few studies have examined how to design and implement nature-based walking interventions sustainably and tailored for this population.

This study aimed to investigate whether a personalized walking program could improve mood in older adults by comparing walks in environments enriched with NBS to walks in urban environments without NBS, using a single-subject A-B-A'-C design.

Participants showed varying levels of depressive symptoms, from mild to severe, as assessed by the Geriatric Depression Scale. Mood during the intervention was monitored using the Visual Analogue Mood Scale. To compare intervention effects across the two conditions, bootstrap Bayesian mean difference estimation was applied.

Results were as follows: a) in principle, no clear significant worsening of mood was observed at the end of the intervention, b) for participants with mild depressive symptoms, mixed treatment effects on mood were observed, with similar effects of walks with and without NBS, c) for participants with moderate depressive symptoms, better mood outcomes were observed following walks with NBS compared to those without, and d) for the participant with severe depressive symptoms, a slight mood improvement was observed early in the first training with stable scores thereafter.

This study suggests that walking influences mood, with a preference for nature-based environments, particularly for individuals with moderate depressive symptoms.

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No

Lunch and poster 2 / 767

Sensing belonging: the role of social touch in visually impaired children

Authors: Giulia Cappagli¹; Guido Catalano²; Marta Guarischi¹; Monica Gori¹; Sabrina Signorini²

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Introduction:

It is well known that touching and being touched is crucial for neuro-cognitive development but very little is known regarding the development of social attention through touch in children, especially in visually impaired ones. This study investigates whether visual deprivation affects the ability to discriminate the source of affective touch, adapting a previous protocol.

Methods:

We tested five typically developing and five visually impaired (VI) 9-month-old infants. Two identical brushes were used: one for tactile stimulation (experimenter 1) and one held visibly by an adult

(parent or experimenter 2) to act as a potential source. Heart rate responses were recorded with a 3-lead ECG.

Results:

Heartbeats per minute were extracted from ECG recordings. We computed mean heart rates during stimulation and baseline for each condition (parent vs. stranger), then averaged across trials. A mixed-model ANOVA with Identity (parent vs. stranger) as a within-subject factor and Group (VI vs. TD) as a between-subject factor revealed no significant effects. Nevertheless, in both groups, heart rate responses showed similar trends for the parent and the stranger.

Conclusion:

Preliminary results suggest that visual deprivation does not affect the ability to discriminate the source of affective touch. While sighted children primarily rely on visual cues, blind children are more likely to use auditory information to interpret social touch.

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No

Lunch and poster 2 / 631

FALSE MEMORIES AND AGING: A SYSTEMATIC REVIEW ON HEALTHY OLDER PEOPLE, MILD COGNITIVE IMPAIRMENT AND ALZHEIMER'S DISEASE

Author: Elena Della Ragione^{None}

Co-authors: Giulia Marselli ¹; Ilaria Corbo ¹; Maria Casagrande ¹

¹ *Department of Dynamic and Clinical Psychology, and Health Studies, the "Sapienza" University of Roma, Roma, Italy*

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False memories refer to the phenomenon of remembering events that never happened, or remembering them quite differently from the way they happened. In aging, this phenomenon is often confused with normal episodic memory decline and therefore under-investigated, particularly in pathological conditions. According to the literature, healthy aging, Mild Cognitive Impairment (MCI), and Alzheimer's Disease (AD) are associated with an increased incidence of false memories, although findings remain inconsistent.

The aim of this systematic review is to examine the production of false memories in healthy and pathological aging, comparing performance between both patient groups.

The review process was conducted according to the PRISMA statement. A total of 27 studies were included, conducted from 1999 to 2022, and the whole sample had a mean age that ranged from 66 to 86 years. Of these, eighteen studies focused on AD, three on MCI, and six explored both conditions. The results present a heterogeneous picture: in some studies, AD patients produced more false memories than controls; in others, fewer or a similar amount. Likewise, results for MCI are inconsistent, with some studies reporting a higher rate of false memories compared to healthy aging.

This variability is largely due to the wide range of assessment tools used. The divergence in findings is discussed through the lens of three main theoretical frameworks: the Fuzzy-Trace Theory, the Source Monitoring Theory, and the Activation/Monitoring Theory.

Understanding the variability in producing false memories in aging and the theories explaining its origin is key to guiding future clinical research.

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Lunch and poster 2 / 665**Asymmetries in Gender Processing: ERP Evidence from Subject-Verb Agreement****Authors:** Martina Abbondanza¹; Luana Serafini¹; Francesca Pesciarelli¹¹ *University of Modena-Reggio Emilia***Corresponding Author:** luana.serafini@unimore.it

Previous ERP research has shown that violations of stereotypical gender expectations elicit responses similar to those seen in morphosyntactic gender agreement violations. These studies did not report any expected semantic effect. The present work aims to investigate the effect of stereotypical and grammatical gender on subject-verb agreement processing. Participants (N=44) silently read sentences presented word by word on a computer screen while EEG was recorded. Sentences contained nouns in subject position that were stereotypically[S] or grammatically[G] masculine (e.g. dirigente[S, M], “manager”; contadino[G, M], “farmworker”) or feminine (e.g. badante[S, F], “caregiver”; vicina[G, F], “neighbor”) and were followed by masculine or feminine verb forms (e.g. è entrato[M]/entrata[F], “he/she entered”). Results showed a gender asymmetry for grammatical gender processing: agreement violations following a masculine noun elicited an N400; whereas violations after a feminine noun elicited a P600. No significant effect was found for stereotypical gender. These findings indicate that masculine forms may be processed differently, with gender potentially remaining underspecified and resolved through context, whereas feminine forms appear to demand explicit morphosyntactic agreement. This asymmetry in processing may have implications for models of gender agreement in language processing, highlighting how context and explicit agreement mechanisms may interact in real-time sentence comprehension.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Lunch and poster 2 / 693****Training spatial orientation and cognitive maps: early results from a virtual tool****Author:** Alberto Umiltà¹**Co-authors:** Alessia Tessari¹; Ford Burles²; Giorgio Li Pira¹; Giovanni Ottoboni¹¹ *Unibo*² *University of Calgary***Corresponding Author:** alberto.umilta2@unibo.it**Introduction**

Cognitive map formation and spatial orientation are essential for navigation, yet traditional assessments often lack ecological validity. The Virtual Spatial Configuration Task (VSCT) is a VR-based tool designed to assess allocentric spatial abilities. In a previous validation study with 54 participants, VSCT performance showed a significant correlation with the Spatial Configuration Task (SCT; $r=.43$, $p=.002$), supporting its construct validity. Given these promising results, the ecological validity and the gamification literature, we explored whether repeated practice with the VSCT could lead to improvements in spatial abilities.

Methods

Building on these findings, we launched a longitudinal training study. After completing the Santa Barbara Sense of Direction Scale (SBSOD), participants randomly performed VSCT (experimental group) or the Rey Auditory verbal learning task (control group) once per week. Spatial abilities were assessed at baseline and after three weeks using the SCT and the Cognitive Map Task (CMT).

Preliminary Results (N =10)

VSCT and SCT scores were strongly correlated at post training ($r = .79$, $p = .0063$). Analyses revealed significant improvements in SCT scores from T1 to T3 ($p = .0054$), VSCT accuracy from T1 to T2 ($p < .0001$), and remained stable thereafter, and in CMT scores from T1 to T3 ($p < .0001$). No meaningful associations were ever found with the SBSOD.

Conclusions

Results reinforce the convergent validity of the VSCT and suggest that repeated exposure to VSCT enhances spatial skills. Moreover, they back up the potential of VR-based training as effective, and accessible, to improve allocentric spatial abilities across multiple spatial tasks.

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Lunch and poster 2 / 715

The Neurophysiological Correlates of Lie Detection: A Meta-Analysis of fMRI Studies with Selectivity Assessment Using Bayes Factor Modeling

Author: Donato Liloia¹

Co-authors: Annachiara Crocetta²; Mattia Corsi¹; Tommaso Costa¹; Sergio Duca¹; Franco Cauda¹; Jordi Manuello³

¹ *Università di Torino, Dipartimento di Psicologia*

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Introduction: The investigation of the neural mechanisms underlying deceptive behavior has historically attracted great interest due to its potential applications in forensic and legal contexts. Over the past decades, research on lie detection has transitioned from behavioral and physiological methodologies to the application of neuroimaging techniques. Among these, functional magnetic resonance imaging (fMRI) has been employed to identify neural activations associated with deception. However, significant heterogeneity across experimental designs and substantial overlap between deception-related activations and domain-general cognitive processes raise concerns about the functional selectivity of these neural markers. **Methods:** This study conducted a coordinate-based meta-analysis using Activation Likelihood Estimation (ALE) to assess convergence across deception-related fMRI findings and applied Bayesian Factor Modeling (BACON) to evaluate the functional selectivity of the identified clusters. 50 task-based fMRI experiments, comprising 873 participants and 468 activation foci, were included. **Results:** ALE analysis highlighted nine significant clusters (FWE-corrected at $p < 0.05$), primarily located in frontal, parietal, and subcortical regions. Behavioral profiling associated these clusters mainly with executive and memory-related processes. Interestingly, BACON analysis revealed that none of these brain regions met the criterion for strong deception-selectivity (posterior probability threshold $P \geq 0.95$). **Conclusion:** These findings suggest, therefore, that deceptive behavior predominantly engages distributed cognitive control networks rather than specialized neural mechanisms uniquely dedicated to deception. This underscores the necessity of employing more ecologically valid paradigms in future studies and highlights the ongoing challenge of identifying neural markers that are uniquely related to deceptive intent.

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Lunch and poster 2 / 722**Semantic Accent in Bicultural Bilinguals: Investigating Conceptual Representations through Lexical Processing****Author:** Beatrice Lanzini¹**Co-authors:** Simone Sulpizio¹; Francesca Foppolo¹¹ *Università degli Studi di Milano-Bicocca***Corresponding Author:** b.lanzini@campus.unimib.it

Over the last decades, various models have addressed the mechanisms of conceptual processing in bicultural bilinguals. Among these, the Shared Distributed Asymmetrical Model (Dong et al., 2005) proposes that bilinguals have partially overlapping yet asymmetrically distributed conceptual representations for their two languages: initially, L2 words only map onto L1-based conceptual representations - a phenomenon known as “semantic accent”; then, as proficiency and cultural exposure increase, L2 labels would progressively link more to conceptual representations specific to the semantics and culture of the L2.

This study tested this assumption by running a primed lexical decision task in participants’ L2. Prime-target pairs were of three types: a) semantically-related in L1 but not in L2; b) semantically-related in L2 but not in L1; c) semantically-related in both. Prime-target association was measured in terms of semantic similarity within vector semantic models. Pairs with non-word targets were included as fillers.

A group of Italian monolinguals (control group) and a group of British English-Italian bilinguals with different levels of proficiency and cultural exposure were involved.

As expected, the control group showed slower reaction times for pairs semantically related in L1 but not in L2, compared to the other two conditions, which did not differ significantly. Contrary to expectations, the bilingual group showed a pattern in line with that of monolinguals. We will discuss these results also considering the stages of L2 acquisition and the levels of cultural exposure.

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Lunch and poster 2 / 729**When Language Meets Technology: Does Sound-to-Spelling Consistency Influence How We Use Word Suggestions?****Authors:** Anna Anastaseni¹; Sonia Kandel²¹ *Université Grenoble-Alpes, Università degli studi di Torino*² *Université Grenoble-Alpes***Corresponding Author:** anna.anastaseni@unito.it

Smartphones integrate text suggestion systems that offer word completion from partially typed input. These tools alter the linearity of the writing process by introducing a continuous shift between typing and reading suggestions. While they offer cognitive benefits—such as reducing spelling errors and memory load—their impact on writing fluency remains debated. One key factor may be

the orthographic transparency of the language being written. Most studies have been conducted in English, a language with opaque orthography, which may limit the generalizability of their findings to more transparent languages. Previous research has shown that users engage with suggestions strategically. There is a cost-benefit trade-off: when a word is difficult to spell, it may be worth interrupting the writing flow to select a suggestion. Conversely, if the spelling is straightforward, the cognitive cost of diverting attention to the suggestion bar may outweigh the potential benefit. To explore this, 48 Italian-speaking and 49 French-speaking young adults performed a spelling-to-dictation task on smartphones using Italo-French cognates (e.g., *accrobata* –*acrobate*) in two conditions: with and without predictive suggestions. Results showed that French participants—writing in a language with opaque orthography—exhibited longer latencies, slower typing speeds, and more frequent use of suggestions. In contrast, Italian participants—writing in a more transparent orthographic system—typed faster, initiated responses more quickly, and made significantly less use of suggestions. These findings suggest that in languages with high phoneme-to-grapheme consistency, technological support is less essential.

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Lunch and poster 2 / 744

Stima e approssimazione nei giovani adulti: verso una misura ecologica delle abilità di calcolo

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INTRODUZIONE

Tra le abilità di computazione, il calcolo esatto rappresenta una competenza formalmente e la più indagata. L'approssimazione (es. $28+17 \approx 50$) e la stima di grandezze (es. "Quanto è lungo un treno ad alta velocità?") si basano invece su meccanismi sviluppati in età precoce e meno allenati nel contesto scolastico. Nonostante la loro rilevanza ecologica, i meccanismi sottostanti a tali abilità rimangono poco esplorati. I curricula scolastici e le pratiche cliniche tendono a trascurare la valutazione, sebbene le linee guida per il curriculum scolastico e quelle cliniche ne sottolineino l'importanza. Esplorare le differenze individuali può fornire spunti per la valutazione dell'impatto della discalculia nella vita dei giovani adulti.

METODO

Abbiamo indagato le differenze individuali nel calcolo esatto (es. $34+8$) e approssimato (es. $250+531 \approx 760$ vs 870), nella stima ecologica ("Quanto pesa una bicicletta?") e nel confronto non simbolico. Sono stati considerati come fonti di variabilità la presenza di Disturbi Specifici dell'Apprendimento (es., Discalculia) e il background formativo.

RISULTATI

Emerge ampia variabilità interna. Il compito di stima risulta il più impegnativo. I partecipanti appartenenti all'area STEM e quelli con DSA mostrano prestazioni estreme e opposte. I compiti di calcolo esatto e non esatto risultano correlati, suggerendo che, sebbene stima e approssimazione non vengano formalmente acquisite, esse si fondano su abilità di calcolo formale, allenata a lungo attraverso la scolarizzazione.

CONCLUSIONI

La vita adulta richiede più del semplice calcolo esatto: spostare l'attenzione verso le competenze di calcolo quotidiano risulta cruciale per ridefinire il focus delle valutazioni cliniche.

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Lunch and poster 2 / 752

Hand Blink Reflex latency changes with age: Insights into physiological brainstem aging

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INTRODUCTION

Blink reflexes have been shown to be a valuable approach to explore age-related physiological changes in brainstem function. However, the Hand Blink Reflex (HBR), a subcortical defensive response that enhances when the stimulated hand is inside the face's peripersonal space, has not been studied in ageing context. Hence, the present study aimed to investigate age-related HBR modulation in healthy individuals.

METHODS

HBR was evoked by administering transcutaneous electrical stimulation to the median nerve at the wrists during bilateral electromyography (EMG) of the orbicularis oculi muscles in a sample of 25 young (Age: 25.5 ± 5.9 years; 17 F) and 25 older (Age: 66 ± 5.5 years; 12 F) healthy adults. The stimulation was administered with the stimulated hand either far or near to the participant's face. EMG signals, filtered and rectified, were processed on MATLAB. To investigate the influence of age on HBR modulation, two ANCOVAs with age as covariate were performed for amplitude and latency of the responses in the two target positions.

RESULTS

Results showed that age significantly increased HBR latency ($F(1-48) = 10.7$; $p = .002$). In contrast, no significant effect of age was found on HBR amplitude, suggesting that the main age-related difference may concern physiological aspects, such as nerve conduction, rather than the processing of defensive peripersonal space.

CONCLUSIONS

Results indicate a significant age-related modulation of HBR latency, supporting the hypothesis of physiological brainstem aging. Monitoring age-related changes in HBR modulation may play a promising role in identifying specific alterations in clinical populations.

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Lunch and poster 2 / 775

Self as a pattern: An exploratory study within the Pettern Theory of Self framework

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Traditional research on the self primarily focuses on the distinction between minimal and narrative aspects of the self, yet little is known about the broader, dynamic interactions between self aspects proposed by the Pattern Theory of Self (PTS). In this exploratory study, we employed a mental imagery paradigm designed to operationalize the PTS-derived self aspects, alongside benchmark conditions for minimal and narrative self. Participants rated emotional valence (negative, neutral, positive), temporal orientation (past, present, future), subjective perspective (first- and third-person perspective) following imagery tasks emphasizing either experiential (“feel”) or reflective (“think”) condition. Repeated measures ANOVA revealed lower (i.e., neutral) valence ratings for the minimal dimension compared to intersubjective and narrative dimensions (i.e., positive), while network analysis on valence uncovered two principal clusters, with situated- and narrative-self dimensions emerging as central hubs. Temporal orientation analyses showed that embodied and minimal self was anchored to the present, whereas affective, cognitive, extended, situated, and narrative dimensions reflected a past orientation. Subjective perspective ratings indicated a predominant first-person perspective across all dimensions except the narrative self, which balanced first- and third-person viewpoints. These results provide the first descriptive empirical mapping of self identity within the PTS framework, revealing how emotional, temporal, and perspectival profiles differentiate across the self pattern, and supporting mental imagery as a method for capturing the multidimensional nature of human self.

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Lunch and poster 2 / 780

DIALOGO E MONOLOGO: EFFETTI SU COMPrensIONE, PENSIERO CRITICO E REVISIONE DELLE IDEE

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Vari studi sostengono che il ragionamento si sviluppi in contesti sociali, in particolare attraverso il dialogo (Kuhn et al, 2024; Mercier, 2016). L'evidenza empirica sui benefici di una comunicazione in formato dialogico è ancora però limitata. Lo studio condotto si propone di indagare l'impatto di tre diversi formati testuali - dialogo, monologo comunicativo e monologo descrittivo - sulla comprensione del testo, sulla qualità dell'argomentazione a sostegno della propria posizione e sulla revisione delle idee. Hanno partecipato allo studio 285 persone, assegnate casualmente a una delle tre condizioni sperimentali. I partecipanti hanno letto un testo che esprimeva due posizioni opposte sulla proposta d'introduzione di autobus elettrici con una maggiorazione del prezzo del biglietto. Prima della lettura dovevano esprimere la loro posizione. Dopo la lettura dovevano esprimere nuovamente la loro posizione, scrivere un testo per argomentarla e poi rispondere a una serie di domande. I risultati non hanno evidenziato differenze significative tra le condizioni nella comprensione del testo. Il gruppo esposto al dialogo presentava un numero significativamente maggiore di argomentazioni che riportavano entrambe le posizioni discusse nei testi. Per quanto riguarda il cambiamento d'opinione, le analisi hanno mostrato l'effetto di variabili individuali come età, intenzione attribuita agli altri e conoscenza diretta e percepita. In conclusione, sebbene il formato dialogico non produca un miglioramento generalizzato nella qualità delle argomentazioni, sembra favorire una maggiore integrazione di prospettive contrapposte.

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Lunch and poster 2 / 782

Può la salienza percettiva prevalere sull'attribuzione di stereotipi di genere nei paradigmi di gaze-following behaviour?

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Lo sguardo altrui è un potente e automatico attrattore dell'attenzione. La tendenza a seguire lo sguardo altrui, nota come gaze-following behaviour (GFB), si riferisce all'orientamento automatico dell'attenzione nella direzione dello sguardo di un altro individuo. Tuttavia, il GFB può essere modulato o inibito da processi di categorizzazione sociale. Nell'ambito della categorizzazione automatica, studi recenti hanno evidenziato il ruolo delle caratteristiche facciali di secondo ordine (Second Order Features, SOF), quali barba e make-up, nell'attivazione di stereotipi di genere. Il presente studio si propone di indagare il ruolo dei SOF nella modulazione del GFB.

Metodo: A questo scopo, ai partecipanti (n=20) è stato richiesto di eseguire una saccade verso sinistra o destra in base alle istruzioni ricevute, ignorando un volto centrale (maschile o femminile) che poteva guardare a sinistra o a destra. I volti distrattori (n=32) sono stati creati manipolando un'immagine maschile e una femminile modificandone le SOF (lunghezza e colore dei capelli, occhiali, trucco/barba). La direzione dello sguardo poteva essere congruente o incongruente rispetto alla richiesta del compito.

Risultati: In linea con i dati della letteratura, i risultati hanno confermato la presenza del GFB, con un aumento degli errori e tempi di latenza più lunghi nelle condizioni incongruenti. Inoltre, è emersa una tendenza a seguire i volti caratterizzati da SOF più salienti, suggerendo un ruolo predominante della salienza percettiva, in grado di prevalere sugli effetti di categorizzazione basati sul genere.

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No

Lunch and poster 2 / 786

Exploring thumb usage in mobile typing: a comparison between digital natives and immigrants

Author: Lorenzo Viviani¹

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Mobile typing is a widespread activity for people of all ages and social backgrounds. Several factors can affect typing efficiency and accuracy including age, typing style (e.g., using two thumbs or a single index finger), keys size and whether the device provides feedback during input. The different use of each thumb on the keyboard between digital natives and immigrants (born respectively before or after 1980; Prensky, 2001) has received little attention and represents a gap in the literature. Specifically, it relates to how efficiently and symmetrically on the keyboard they alternate between the two thumbs during input. Effective thumb alternation and balanced use of the smartphone keyboard can be considered indicators of digital interaction proficiency and of bimanual coordination. 54 naïve right-handed participants, equally divided between digital natives and immigrants, were recorded while typing seven sentences on Google (content consumption) and on WhatsApp (content generation). Each sentence guaranteed a symmetrical and comprehensive distribution of letters across the keyboard. Right and left thumb usage rates for each letter were recorded and analyzed. Results showed that: (i) both groups used the right thumb significantly more than the left thumb for most letter-keys; (ii) digital immigrants relied on their right thumb for a greater number of letter-keys compared to digital natives; and (iii) the type of application did not influence the distribution of thumb usage. This work contributes to the emerging framework of digital competence by exploring how people of different ages have adapted to technology and the strategies they have developed.

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Lunch and poster 2 / 795

Serial dependence in a joint action context

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Human perceptual decisions are biased by prior events, a phenomenon known as serial dependence. For instance, when judging the orientation of a sequence of stimuli, responses are systematically biased toward the orientation of the preceding stimulus. This phenomenon has been extensively studied focusing on one participant at a time, thus limiting the findings to the level of individual perception and cognition. In the present study we investigate serial dependence within a social interaction context, in which two participants are presented with the same stimulus and the task of providing an orientation judgment is randomly assigned to one of them. This design allows us to assess whether lingering traces of prior stimuli remain active even when no explicit response is required from the individual, and instead, a co-agent engaged in the same task performs the judgment. We tested 20 participants who performed the task under three conditions: alone, with a computer, or with another participant. In each condition, participants responded to only half of the trials; during the remaining trials, the response was provided by the computer or the co-agent. Our initial

results reveal dissociable effects of the joint context on the bias and precision of perceptual judgments: while a systematic bias toward previous orientations was observed across all conditions, the variability of perceptual judgments decreased considerably when participants performed the task with a human co-actor compared to a computer.

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Lunch and poster 2 / 797

Symbolic and non-symbolic numerical representations in elderly and young adults: an exploratory EEG study

Authors: Carla Meloni¹; Beniamina Mercante²; Federico Zorzi³; Irene Paoli⁴; Rachele Fanari³; Paolo Enrico⁴

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Numeracy has significant implications throughout the life course, and its age-induced decline represents a vulnerability factor in elderly population. We studied the impact of healthy aging on the ability to access basic symbolic and non-symbolic numerical representations using a parity judgment task (PJT), with three numerical formats: Arabic digits (N), Finger representations (F), and Dots (D). During PJT administration we recorded participant responses using high-density electroencephalography (hEEG).

Population under study included elderly (68.8 ± 5.09 years, $n=10$, $F = 5$) and young (23.1 ± 3.54 years, $n=10$, $F = 5$) participants. We measured response Accuracy, along with the characteristics of key neural correlates of numerical processing—namely, the N200 and P100 components. Additionally, we employed Multivariate Pattern Analysis (MVPA) to assess differences in hEEG responses across the three numerical formats (N,F,D).

Results show no difference in Accuracy between young and elderly in all three PJT conditions (N,F,D). Moreover, we observed a difference in N200 Amplitude between young and elderly participants in the D condition only, while N200 Latency differed between the two groups across all PJT conditions. The P100 results showed an Amplitude difference in the F condition compared to the N and D conditions, but no difference between young and elderly participants. Additionally, there were no latency differences among the three conditions or between age groups. Lastly, MVPA results indicate that hEEG responses can successfully distinguish between different numerical representations.

We conclude that age-related numeracy decline reflects reduced processing efficiency across distinct numerical neural networks.

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Lunch and poster 2 / 830

Self-compassion e realtà virtuale nel supporto psicologico di atleti agonisti post-infortunio: un protocollo sperimentale

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L'infortunio sportivo rappresenta un evento critico nella carriera di un atleta con impatti significativi sul suo benessere psicologico. Il presente studio, con campionamento in corso, propone un intervento innovativo che mira a promuovere l'autostima, la resilienza e la compassione verso sé stessi in atleti agonisti in fase di riabilitazione post infortunio. Il campione (n=20; 10 sport individuali, 10 sport di squadra) include atleti infortunati negli ultimi 18 mesi. L'intervento combina esercizi guidati di self-compassion e realtà virtuale immersiva (video a 360° con visore Meta Quest 3s). Tali esercizi vengono proposti in 4 sessioni consecutive della durata di circa 60 minuti, svolte a distanza di una settimana l'una dall'altra, per una durata di totale di 4 settimane di sperimentazione. In ogni sessione sono previste le seguenti fasi: misurazione della baseline, esposizione a un video VR della propria disciplina sportiva e un esercizio di self-compassion (es. self-talk, visualizzazione o accettazione emotiva). Prima dell'inizio dell'intervento e alla sua conclusione, è prevista la somministrazione di questionari per valutare resilienza, autostima, self-compassion e user experience (Resilience Scale, Rosenberg Self-Esteem Scale, Self-Compassion Scale, UEQ). Inoltre, prima e dopo ogni sessione verranno rilevati rilassamento, ansia da prestazione, fiducia nella ripresa e self-compassion percepita (Relaxation State Questionnaire, VAS). L'attività cardiaca sarà monitorata per tutta la sessione tramite sensore CorSense posto sul dito indice. Si ipotizza un miglioramento significativo dei punteggi relativi a resilienza, autostima e self-compassion dopo l'intero intervento, accompagnato da una maggiore attivazione fisiologica durante l'esposizione immersiva e da un successivo stato di rilassamento durante i momenti di auto-riflessione. Lo studio mira a promuovere un approccio integrato alla riabilitazione psicologica degli atleti, evidenziando il potenziale della tecnologia positiva nel supportare il benessere mentale e la ripresa delle funzionalità.

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Lunch and poster 2 / 831

Exploring the Neurophysiological Impact of Alternating Bilateral Stimulation on Emotional Reactivity in University Students

Author: Camilla Panacci¹

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Introduction: University students often face high emotional and cognitive demands, highlighting the need for effective strategies to regulate anxiety and emotional reactivity. Alternating Bilateral Stimulation (BLS), a non-invasive technique derived from EMDR therapy, alternately activates brain hemispheres through rhythmic sensory stimuli. It is hypothesized to reduce emotional reactivity by weakening fear memory traces (1) and promoting cognitive integration of emotional experiences (2). The Late Positive Potential (LPP), an event-related potential (ERP) larger for negative than neutral stimuli (3), represents a reliable marker of emotional reactivity.

Aim: This study examined whether alternating BLS alone could modulate emotional reactivity and state anxiety among university students, as reflected by changes in LPP amplitude in response to negative stimuli.

Methods: Thirty students were randomly assigned to two groups. The experimental group received bimodal alternating BLS, while the control group received bimodal simultaneous BLS, activating both hemispheres together. EEG (64 channels) was recorded during a visuomotor Emotional Simple Response Task (E-SRT) before (T0) and after (T1) 15 minutes of stimulation. State anxiety (STAI-Y1) and emotional impact ratings (0–100 VAS) were also assessed.

Results and Conclusions: No significant changes were found in state anxiety or VAS scores. However, a reduction in centro-parietal LPP amplitude (~600 ms) was observed in the experimental group only, suggesting a decrease in emotional reactivity at the neurophysiological level even without changes in subjective measures. Although based on a single session, these findings suggest that alternating BLS may enhance students' well-being. Future research should investigate long-term effects of repeated stimulation.

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Lunch and poster 2 / 835

Apprendimento (Trans)Formativo: Un Impact Game per la Metacognizione e la Mentalità di Crescita

Authors: Alessandra Cecilia Jacomuzzi¹; Brigitta Pia Alioto²

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Gli spazi di apprendimento online, durante e dopo la pandemia Covid-19, sono divenuti per il cervello dell'uomo non-luoghi, ossia mezzi utili alla fruizione didattica, caratterizzati dall'isolamento fisico e mentale. I neuroni GPS, adibiti al riconoscimento dello spazio circostante, non si attivano nel setting digitale. Inoltre, le dimensioni dell'attenzione e del coinvolgimento hanno subito delle trasformazioni a causa dello spazio tecnologico e delle metodologie didattiche utilizzate nello stesso. Da qui l'esigenza di utilizzare, nei contesti di formazione aziendale online, didattiche innovative che possano elicitarne la dimensione emozionale fondamentale nei processi cognitivi. Inoltre la necessità di sviluppare competenze utili a far fronte alle crisi del cambiamento e alla ristrutturazione dei propri schemi mentali. In questo studio abbiamo sviluppato un impact game, in collaborazione con il Cologne GameLab, per poter studiare due aspetti fondamentali: (1) come, durante l'esperienza di gioco, il coinvolgimento e l'attenzione vengono elicitati e (2) se il gioco, così strutturato, permette di riorientare il proprio agire verso una mentalità di crescita, attraverso il processo metacognitivo.

Parole chiave: Processi Cognitivi, Processi Metacognitivi, Impact game, Mentalità di Crescita, Neuroplasticità Cerebrale.

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No

Lunch and poster 2 / 836

ELABORARE OGGETTI AFFERRABILI ACCOPPIATI A MANI EGO-CENTRICHE ATTIVA PROGRAMMI MOTORI DI AFFERRAMENTO

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In un compito di scelta, la prestazione è tipicamente più veloce e accurata quando l'orientamento della porzione afferrabile di un utensile corrisponde alla posizione della risposta manuale. In base all'ipotesi dell'attivazione di affordances, il manico visivamente saliente o meno, attiverebbe un'appropriata azione di afferramento della mano ad esso allineata.

Secondo una linea di ricerca indipendente, le risposte motorie sono facilitate per oggetti presentati vicino al palmo di una mano in quanto questi diventerebbero più facilmente candidati all'azione (hand proximity effect).

Nell'intento di unire i due domini, il presente studio ha testato l'ipotesi secondo la quale l'elaborazione di utensili in associazione a mani egocentriche sia cruciale per l'attivazione di affordances.

Immagini di utensili con il manico rivolto verso sinistra o destra sono state accoppiate a immagini di mani egocentriche. I partecipanti premevano un tasto sinistro o destro in presenza di una mano sinistra o destra, allineata o meno con il manico dell'utensile. Le mani potevano avere una posa afferrante-Esperimento 1, di palmo-Esperimento 2, di dorso-Esperimento 3.

I risultati mostrano un effetto affordance significativo e di ampiezza simile nelle tre condizioni e supportano l'ipotesi secondo la quale la percezione di una mano egocentrica, indipendentemente dalla postura assunta, sarebbe sufficiente ad attivare programmi motori di afferramento.

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Lunch and poster 2 / 887

Associazione tra attività sportiva e abilità cognitive, emotive e sociali: uno studio longitudinale su adolescenti che praticano la pallavolo

Author: Teresa Di Bella¹

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Questo studio longitudinale esplora l'associazione tra la pratica della pallavolo non agonistica e lo sviluppo di abilità cognitive, competenze emotive e capacità sociali in adolescenti che praticano la pallavolo (12-19 anni), confrontandoli con un gruppo di non atleti.

Il disegno prevede valutazioni a inizio (T1) e fine stagione (T2, 9 mesi) tramite task cognitivi (Flanker, Number Letter, Stop Signal per funzioni esecutive) e questionari (RSES, ERQ, EIS, V-MSES).

Dai risultati preliminari al T1, l'età risulta direttamente associata a migliori tempi di reazione in un compito di controllo esecutivo, mentre il genere è associato a migliori performance nella flessibilità cognitiva (maschi>femmine) e, nella regolazione emotiva, a maggior uso della soppressione espressiva (femmine>maschi). Per quanto riguarda l'expertise, nell'autoefficacia individuale, il gruppo che

pratica da 4-6 anni riporta punteggi significativamente più alti rispetto al gruppo 1-3 anni. Le associazioni tra expertise e le altre misure cognitive ed emotivo-sociali saranno chiarite dai confronti futuri.

Questi dati fungono da baseline. Il confronto longitudinale con i dati T2 all'interno del gruppo di pallavolisti, unitamente al confronto trasversale con il gruppo di non atleti, sarà cruciale per determinare l'effettiva associazione della pratica della pallavolo con traiettorie di sviluppo cognitivo, emotivo e sociale. I risultati finali mirano a informare interventi basati sullo sport per promuovere il benessere adolescenziale.

Parole chiave: Sport di squadra, adolescenza, funzioni esecutive, competenze emotive, pallavolo, benessere psicosociale, longitudinale.

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Lunch and poster 2 / 953

Apprendere attraverso le interazioni sociali: il ruolo delle differenti componenti dell'attenzione nell'apprendimento osservativo

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Introduzione. Le interazioni sociali con altre persone all'interno delle esperienze quotidiane sono potenti mezzi per imparare a interagire con il mondo. Attraverso l'apprendimento osservativo, una forma di apprendimento sociale, gli individui possono ridurre il tempo e i tentativi necessari per apprendere azioni e comportamenti complessi. Sebbene l'apprendimento osservativo sia cruciale per lo sviluppo cognitivo e per l'acquisizione di abilità complesse, e rappresenti un approccio efficace anche per l'acquisizione degli apprendimenti scolastici, i meccanismi cognitivi alla base non sono stati ancora del tutto chiariti e poco si sa su come l'attenzione moduli questa complessa e fondamentale modalità di apprendimento. L'obiettivo principale dello studio è quello di analizzare il ruolo giocato dalle principali componenti dell'attenzione (selettiva, focalizzata, distribuita, alternata) nell'apprendimento osservativo durante i primi anni della scuola primaria.

Metodo. A tal fine, 68 bambini (età media: 6 anni e 4 mesi $\pm$ 0.6) hanno partecipato allo studio, svolgendo un protocollo computerizzato comprendente i test attentivi dello strumento "Attenzione e concentrazione" e un compito di apprendimento osservativo in cui era richiesto di apprendere un percorso attraverso l'osservazione di un modello.

Risultati. I risultati mostrano che diverse componenti dell'attenzione influenzano l'apprendimento osservativo. Nello specifico, l'attenzione selettiva e l'attenzione focalizzata visuo-spaziale predicono un apprendimento più efficiente, con una riduzione significativa degli errori durante la riproduzione del comportamento osservato.

Conclusioni. I risultati potrebbero avere un'importante rilevanza educativa e applicativa. Infatti, una maggiore conoscenza delle componenti attenzionali coinvolte nell'apprendimento osservativo potrebbe favorire lo sviluppo di nuove strategie per promuovere la capacità di apprendere attraverso le interazioni sociali.

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Lunch and poster 2 / 704**Regolazione emotiva e sonno: associazione tra tono affettivo e qualità del sonno nella vita quotidiana.****Authors:** Costanza Colombo¹; Giorgia Degasperì¹; Luca Menghini¹; Valentina Cardì¹; Nicola Cellini¹¹ *Dipartimento di Psicologia Generale, Università degli Studi di Padova***Corresponding Author:** costanza.colombo@unipd.it

Numerosi studi hanno evidenziato una relazione tra qualità del sonno e regolazione emotiva, suggerendo che il sonno svolga un ruolo cruciale nei processi emotivi. Tuttavia pochi studi hanno indagato tali processi nella vita quotidiana. Il presente studio ha l'obiettivo di osservare la relazione bidirezionale a livello within tra qualità del sonno e affettività nella quotidianità. Inoltre, si vuole indagare se tali relazioni differiscano in base alla gravità della sintomatologia dell'insonnia e all'uso di strategie disfunzionali di regolazione emotiva.

Settantacinque partecipanti (59 femmine; età media = 23.4, SD = 2.2) hanno preso parte allo studio. Dopo uno screening iniziale, è stato svolto un periodo di 14 giorni di Ecological Momentary Assessment (EMA) tramite l'app m-Path, con 7 rilevazioni giornaliere volte a misurare la qualità del sonno (al mattino), il tono edonico e l'uso di strategie di regolazione emotiva durante la giornata. I dati sono stati analizzati con modelli lineari misti. La metodologia della ricerca (<https://osf.io/by3qn>) e le analisi (<https://osf.io/psb5j>) sono state preregistrate su OSF.

Una migliore qualità del sonno notturno sembra associata ad un umore più positivo il giorno successivo, ma non è stata osservata un'associazione significativa tra umore diurno e il sonno della notte successiva. Un uso frequente di strategie disfunzionali di regolazione emotiva sembra legato ad un umore più basso. Inoltre, un tono emotivo più positivo ed una migliore qualità del sonno sembrano essere associati a una sintomatologia dell'insonnia meno severa.

I risultati evidenziando come qualità del sonno notturno influenzi la regolazione affettiva quotidiana.

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Lunch and poster 2 / 763**Implicit adaptation to unnatural visuomotor mapping in an immersive environment****Authors:** Vittorio Dalmaso¹; Camilla Cornaro¹; Giulia Castagliuolo¹; Claudio de'Sperati¹¹ *Laboratory of Action, Perception and Cognition, Facoltà di Psicologia, Università Vita-Salute San Raffaele, Milano***Corresponding Author:** dalmaso.vittorio1@hsr.it

INTRODUCTION. Implicit adaptation is an important issue in extended reality settings. Here we investigated adaptation by artificially amplifying the visual consequences of head rotation (Augmented Gaze-AG) to facilitate immersive visual exploration in a 360-deg telepresence environment (virtual biking).

METHODS. Eighteen participants completed three 3-minutes exposures performing a task consisting in detecting a visual target presented in the frontal or rear space. In two exposures, AG was applied (x3 horizontal amplification, linear and non-linear). Immediately and five minutes after each exposure, participants made instructed head turns in darkness to test adaptation retention.

RESULTS. During AG exposures, head movements decreased, and visual exploration increased, as compared to control exposure. Also, participants glanced more to the rear space, which improved task performance and judgement of task easiness. AG did not increase cybersickness, but worsened sense of reality (UX ratings), though this was less pronounced at the end of exposure, compared to the beginning. Following AG exposures, head turns directed to spatial references in darkness ("turn

rightward”, “turn backward”) had smaller amplitude compared to control (motor aftereffect). When the instruction contained a visual reference (“turn to the biker face”), amplitude further decreased (cognitive aftereffect).

DISCUSSION. Besides confirming that AG facilitates visual search without unpleasant symptoms, these preliminary results suggest that participants adapted to such highly unnatural visuomotor mapping through reduced perceived unnaturalness of AG over time. The presence of distinct cognitive and motor aftereffects suggests that both explicit and implicit adaptive changes can take place with even very short exposures to AG.

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Lunch and poster 2 / 750

From Action Goals to Social Interactions: Neural Dynamics of Intentionality Processing

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Understanding others' mental states is a fundamental human ability, essential for navigating a complex and dynamic social world. Identifying the brain areas involved in this capacity is crucial, given the clinical and social consequences that difficulties in social understanding can entail. To better delineate the roles of the mentalizing and mirror systems, we performed a functional MRI study with healthy individuals. Specifically, 50 healthy young adults participated in a task requiring to view images and videos portraying different types of intentionality: immediate goal-directed actions, long-term goal-oriented intentions, and socially-directed intentions toward another agent. Our results reveal a progressive increase in brain activity within social cognition areas, from decoding immediate goals to understanding social intentions, involving the mentalizing network (dorsolateral prefrontal cortex and cingulate cortex), mirror areas (inferior frontal gyrus), as well as regions implicated in emotional recognition and salience processing, such as the amygdala. These findings not only clarify the functional roles of social brain areas but also offer insights for future research on clinical populations, potentially guiding the development of rehabilitation treatments using neurostimulation.

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Lunch and poster 2 / 723

Attentional processes in Parkinson's Disease: a meta-analysis

Author: Barbara Blasutto^{None}

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Parkinson's disease (PD) is typically known as a neurodegenerative disorder affecting motor skills and is characterized by the loss of dopamine-producing neurons in the substantia nigra and subsequent accumulation of Lewy bodies in the residual neurons. While motor symptoms are hallmark features of PD, increasing evidence suggests that non-motor symptoms, such as attentional deficits, significantly impact the quality of life.

Therefore, the present meta-analysis aims to investigate attentional function in individuals with Parkinson's disease (PD) compared to healthy controls (HC), focusing exclusively on studies using computer-based tasks to ensure accurate and comparable data.

The systematic review was conducted according to the PRISMA Statement method and registered in PROSPERO. At the end of the process, 42 studies were included in the meta-analysis.

Results consistently showed that PD patients have slower reaction times (RT) and reduced accuracy compared to healthy controls (HC). These deficits were observed across various tasks, including the Flanker Task, Attentional Network Task, and Simple and Choice Reaction Time Tasks. The meta-analysis revealed a large effect size for RT differences and a moderate effect for accuracy. Notably, no significant differences were found between ON and OFF medication states, indicating that attentional impairments may not be solely due to dopaminergic therapy.

These findings indicate that brain changes in PD likely impair information processing and hinder compensatory mechanisms during attention tasks. Variability across studies may reflect the disease's heterogeneous effects on neural networks, highlighting the need for sensitive, task-specific tools to assess attentional function.

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No

Lunch and poster 2 / 760

Superstitious Decision-Making Under Risk

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Superstitious beliefs are culturally prevalent in western and eastern societies. Sometimes they can affect the decision process, as we can see the fields of economics, marketing and sports. In the realm of decision making under risk, Prospect Theory offers a solid background capable of capturing people's preferences, namely, their tendencies to avoid losses. We are interested to see if superstition can act as a risk or a protection factor, making people respectively more or less loss averse.

A multiple price list task was performed between-subjects (N=145) as three different scenarios: one neutral (N), one superstitious (S), and one with a superstition and a ritual to counterbalance it (SR). Participants had to indicate their preference for the secure option, the ambiguous option, or if they felt the two previous options were the same. They also completed a novel superstition scale through which we were able to divide them in a low and a high superstition group.

A two-way ANOVA (Superstition vs Scenario) on a loss aversion index revealed a main effect of the

scenario close to significance ($F=3.43$; $p=0.057$; η^2 parziale=0.301), while no main effect of superstition or interaction. Post-hoc showed that participants in condition N were less loss averse than participants in condition SR ($p=0.027$), whereas no difference emerged between the other conditions. These results, although not conclusive, could suggest the following: regardless of personal beliefs in superstition, the way that a scenario is framed, could possibly affect loss aversion. Future work should focus on explore this topic further.

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Lunch and poster 2 / 841

Grasp planning influences the face inversion effect

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BACKGROUND

Face perception relies on global processing, minimizing attention to individual features. Inversion disrupts this by impairing spatial configuration, shifting focus to local features (Maurer et al., 2002). Motor planning also shapes perception: precision grips enhance local analysis, while power grips promote global processing (Job et al., 2017). This study tests whether grip planning influences visual processing in an inversion paradigm.

METHOD

Twenty-eight adults completed an inversion task with upright and inverted stimuli (faces, bottles, houses), responding using either power or precision devices. Reaction times and accuracy were analyzed with a linear mixed-effects model using a Complex Random Intercepts structure to account for subject-specific variability across categorical conditions (Scandola & Tidoni, 2024).

RESULTS

Orientation and stimulus type had significant effects, $F(1, 53.89) = 27.28$, $p < .001$; $F(2, 54.00) = 3.69$, $p = .03$, respectively, with a significant orientation $\times$ stimulus interaction, $F(2, 107.04) = 7.82$, $p < .001$. The grasping $\times$ stimulus interaction approached significance, $F(2, 53.92) = 2.69$, $p = .077$. Exploratory post-hoc contrasts revealed a stronger inversion cost for faces during power grasp planning ($t(144) = 5.21$, $p < .0001$) compared to precision grasp planning ($t(143) = 3.72$, $p = .0017$).

CONCLUSION

While orientation and stimulus type independently influence reaction times, their interaction amplifies the inversion cost for faces when a power grasp is planned. This dynamic interplay between action and perception highlights the need for further investigation into how motor planning shapes cognitive processing.

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Lunch and poster 2 / 731

Modulating Pain in Fibromyalgia: The Role of tDCS and Exercise therapy

Author: Angelica De Sandi¹

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Objective

Fibromyalgia is a chronic condition characterized by widespread pain, fatigue, and psychological symptoms, significantly affecting quality of life. Non-pharmacological treatments, such as non-invasive neuromodulation and exercise therapy, have shown potential in alleviating symptoms. This study aimed to evaluate the effects of transcranial direct current stimulation (tDCS) alone or combined with exercise therapy, in patients with fibromyalgia.

Materials and Methods

45 patients were randomly assigned to three groups: (A) tDCS alone, administered three times per week for three weeks (20 minutes per session, 2 mA; n=15); (B) computer-based exercise therapy on the same schedule (n=15); (C) combined treatment with alternating tDCS and exercise therapy (n=15). Stimulation was applied over the somatosensory cortex and spinal cord at the T10 level. Assessments were conducted at baseline (T0), post-treatment (three weeks, T1), and at three-month follow-up (T2), using pain and quality of life questionnaires (BPI, VAS, SF-12, HADS) and Laser Evoked Potentials (LEP).

Results

All groups showed a reduction in pain scores. A significant Time × Group interaction was found for HADS-Anxiety, with a marked reduction in anxiety symptoms in Group C ($p < .001$). LEP data revealed increased nociceptive thresholds and decreased N2/P2 amplitudes at T1 and T2, particularly in Groups A and C, suggesting central modulation of pain processing.

Conclusion

tDCS and exercise therapy were both effective in reducing pain, with the most promising outcomes in the tDCS-only and combined groups. These findings highlight the therapeutic potential of non-invasive neuromodulation, alone or combined with exercise therapy, in fibromyalgia treatment.

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No

Lunch and poster 2 / 792

Psychometric properties of the Workplace Ostracism Scale (WOS): New evidence from Item Response Theory and Differential Item Functioning (DIF) analyses

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The Workplace Ostracism Scale (WOS) is the most widely used instrument to assess Workplace Ostracism (WO), a particular form of social exclusion, comprising individual perceptions of being ignored and/or excluded by colleagues or supervisors at the workplace. The goal of the study was to contribute to the cross-validation of the WOS on an Italian sample (N = 441; 53.3% males; Mage = 35, SD = 9.98) through Item Response Theory (IRT) analyses (Graded Response Model). Additionally, the study sought to ascertain the scale's gender and age invariance and to explore the relationships with associated variables. Consistent with the original version, our results confirmed the unidimensionality of the scale [$\chi^2(34) = 68.962$, $p < .001$, CFI = .963, TLI = .951, RMSEA = .048 (.032 - .065), SRMR = .035] and suggested that the instrument was more informative at higher levels of the trait. The negative associations between WOS θ scores and job satisfaction, job engagement, organizational citizenship behavior, and life satisfaction supported the validity of the scale scores. Differential Item Functioning (DIF) analyses indicated that the WOS showed minimal gender non-invariance and was invariant across age groups. Our findings suggest that the WOS is a robust measure for assessing acute cases of workplace ostracism, which enhances its utility in high-risk settings.

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Lunch and poster 2 / 765

Neural speech tracking in young cochlear implanted adults

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Language acquisition depends on critical periods in early ontogeny when the brain is especially sensitive to linguistic input. For typically hearing children, auditory exposure during this time supports the development of the neural systems underpinning speech perception and comprehension. In cases of congenital deafness, although hearing can be restored through cochlear implantation, this typically occurs, at the earliest, after one year of age. This study investigated whether young adults who were congenitally deaf but received early cochlear implants exhibit neural processing of naturalistic speech similar to that of their typically hearing peers. We recorded EEG data from two homogeneous, age- and education-matched groups: 12 early-implanted CI users (mean implantation age: 1 year, 10 months) and 12 typically hearing controls. Participants listened to short stories presented as audio-only (A) or audiovisual (AV) and answered comprehension questions. At the single participant level, we computed Temporal Response Functions (TRFs) to assess neural synchronization with the speech envelope. Both groups showed clear TRFs in response to A and AV speech envelope. For both groups neural tracking was facilitated in the AV compared to the A condition ($p_{cluster} < 0.05$). However, the CI group exhibited enhanced TRFs amplitude possibly suggesting greater neural tracking effort. Coherently, the CI group had lower comprehension scores compared to hearing controls.

These findings suggest that early-implanted CI users can develop neural speech tracking that closely resembles that of their hearing peers. However, they also highlight the impact of hearing deprivation in early ontogeny, both at the neural and behavioral level.

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Lunch and poster 2 / 712**Do capuchin monkeys (*Sapajus* spp.) follow the gaze of conspecifics displayed on a screen?****Author:** Valentina Truppa¹**Co-author:** Gabriele Schino¹¹ *Istituto di Scienze e Tecnologie della Cognizione, Consiglio Nazionale delle Ricerche***Corresponding Author:** valentina.truppa@istc.cnr.it

The ability to follow the gaze of conspecifics can provide valuable information about the environment and may be essential for developing more advanced socio-cognitive skills in both humans and other species. In this study, we took a comparative approach to investigate whether robust capuchin monkeys (*Sapajus* spp.) can follow the gaze of their conspecifics. We presented 10 subjects with photographs of conspecifics' faces on a touchscreen and measured the time it took to touch a dot that appeared beside each picture after a very short delay (300 or 600 ms). The photographs depicted familiar or unfamiliar conspecifics, and the dot appeared aligned with the direction of their gaze (congruent trials) or in the opposite direction (incongruent trials). We predicted that if capuchin monkeys follow the gaze of the conspecific shown in the picture, their response time would be shorter for congruent trials than for incongruent trials. We also expected that this effect would be stronger for familiar conspecifics than for unfamiliar conspecifics. Contrary to our predictions, we found that the response time was significantly longer for congruent trials than for incongruent trials. Furthermore, this effect was not affected by the familiarity of the conspecifics. These results suggest that gaze following may be less prevalent than previously thought or could be sensitive to specific experimental conditions, such as still 2D images rather than real-life subjects. It is also possible that capuchin monkeys tend to avoid looking directly at the gaze of conspecifics.

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Lunch and poster 2 / 778**The Role of Heart Rate Variability in Mild Cognitive Impairment****Authors:** Francesca Scoma¹; Ilaria Corbo¹**Co-authors:** Giuseppe Forte¹; Maria Casagrande¹¹ *Department of Dynamic and Clinical Psychology, and Health Studies - Sapienza, University of Rome***Corresponding Author:** ilaria.corbo@uniroma1.it

Mild Cognitive Impairment (MCI) is a clinical condition characterized by cognitive deficits that do not significantly interfere with daily functioning. It represents an intermediate stage between normal aging and dementia and is considered a preclinical phase that may progress to more severe neurodegenerative disorders, such as Alzheimer's disease. In addition to cognitive symptoms, MCI has also been associated with physiological alterations, including changes in autonomic nervous system (ANS) functioning. Recent studies have highlighted a correlation between heart rate variability (HRV) and cognitive performance in individuals with MCI, suggesting HRV as a potential biomarker

of cognitive decline.

The aim of the present study is to examine the relationship between ANS functioning and cognitive impairment in individuals with MCI by assessing resting-state HRV and comparing it with a healthy control (HC) group. A total of 98 participants aged 50 to 88 years (mean age: 64.4 ± 8.49) were recruited and divided into two groups based on clinical diagnosis: healthy controls (N=51) and MCI (N=47). While no significant differences emerged in socio-demographic or physiological variables, the MCI group showed significantly poorer performance on cognitive assessments. Regression analyses revealed that HRV variables significantly predicted cognitive performance in specific domains, particularly executive functions. Among individuals with MCI, high-frequency HRV was positively associated with executive performance, whereas low-frequency HRV showed a negative association. These findings support the role of HRV as a potential marker of executive function decline in MCI, reinforcing its potential as a non-invasive biomarker for the early detection of cognitive deterioration.

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Lunch and poster 2 / 791

The use of AI to create visual stimuli in psychology

Author: Semira Tagliabue^{None}

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In recent years, technological advancements have led to the development of Artificial Intelligence image generators, expanding creative possibilities beyond traditional approaches (Pise et al., 2024). In psychological research, text-to-image generation tools are used for various purposes. They have been used to develop a wide range of visual stimuli, including novel and familiar objects useful in perception research (Cooper et al., 2023); AI-generated faces, both bias and unbiased, for studying racial and gender perceptions (AlDahoul et al., 2025); AI-generated faces for use in eyewitness identification tasks (Greenspan & Bergold, 2025); visual artworks for comparison with human-made pieces in aesthetic evaluations (Hees et al., 2025); and emotionally evocative images for emotion research (Zhang et al., 2024), among others. Additionally, they contribute to interactive creative processes, as seen in the AI-assisted art-making tool DeepThInk developed by Du (2023) as a new approach to art therapy.

Due to the growing integration of creative AI into psychological research, there is an increasing need to understand the criteria researchers use when implementing AI-generated visual stimuli and assessing their quality and validity. Evaluating the validity of visual stimuli is important to ensure that the images accurately reflect what is being studied and that the results are reliable.

A literature search using keywords such as "AI," "psychology," "visual stimuli," "text-to-image generation" will be conducted to identify, in the papers, the criteria researchers use for selecting among different AI tools, generating visual stimuli through effective prompting, and evaluating the overall quality and validity of the generated images.

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No

Keynote 2: Luana Serafini / 1001**Women Have Taken the Trousers, but Men Still Avoid the Skirt: Neural Evidence for a Gender Stereotype Asymmetry****Corresponding Author:** luana.serafini@unimore.it

Female-related and male-related stereotypes have so far been examined under the unique construct of “gender stereotypes”. However, growing behavioral and neural evidence has suggested that they may constitute distinct phenomena. Our current research supports this claim by capitalizing on the uniqueness of human faces to more strongly trigger gender stereotypes than verbal labels.

Previous studies have explored the neural bases of implicit gender stereotyping using word-based priming paradigms. We extended this approach by incorporating both words and faces, recording behavioral (Reaction Times, RTs) and neural (Event-Related Potentials, ERPs) responses. In Study 1, participants gender-categorized target third-person singular pronouns (lui ‘he’ or lei ‘she’) or faces (male, female), preceded by grammatically marked or stereotypically associated words (e.g., pensionato ‘pensioner’, passeggera ‘passenger’; conducente ‘driver’, badante ‘caregiver’). ERP data revealed an asymmetry in gender stereotype processing for faces in stereotypical contexts, but no previously found effect for pronouns. We confirmed that faces are more potent stereotype triggers than words. Study 2 replicated and extended these findings by examining both word-face and face-word priming effects. Participants performed a gender categorization task on faces preceded by stereotypically associated words (e.g., conducente ‘driver’, badante ‘caregiver’), and a lexical decision task on stereotypically associated words or non-words preceded by a face. ERP asymmetries were again observed when faces were targets, but only partially when stereotype-associated words were targets. Study 3 investigated the neural correlates of stereotypical and grammatical noun-verb gender agreement in Italian sentences. Results showed an asymmetry for grammatical but not stereotypical gender agreement. This grammatical asymmetry could owe to the unmarked nature of the masculine form in gender-marked languages.

Together, these studies show that female- and male-related stereotypes, as well as grammatical gender, engage distinct cognitive mechanisms. Stereotype asymmetries likely reflect the uneven evolution of gender roles, underscoring the need for distinct investigation and targeted intervention across different gender domains.

If you’re submitting a symposium talk, what’s the symposium title?:**If you’re submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****New perspectives for developing short forms of tests / 565****New perspectives for developing short forms of tests****Author:** Ottavia Epifania¹**Co-author:** Rossella Caliciuri²¹ *Università di Trento*² *Università Cattolica del Sacro Cuore***Corresponding Author:** ottavia.epifania@unitn.it

As a general rule of thumb, the higher the number of items in a test, the better the measurement in terms of validity and reliability. However, there is a trade-off between the number of administered items and response quality. One of the challenges psychometrics and mathematical psychology have tackled is the development of short forms that could preserve the validity and reliability of measurements. This symposium presents five contributions where existing and new procedures

for shortening tests and questionnaires are explored from different perspectives. Specifically, one contribution falls under machine learning, applying a genetic algorithm and the Spearman-Brown prophecy to shorten a typical performance test developed using Classical Test Theory. Another contribution presents a new Item Response Theory-based algorithm for shortening tests, which aims at maximizing the measurement precision while minimizing the number of administered items and accounting for the response fatigue. Two contributions present the potential of Knowledge Space Theory to generate short forms both within and outside the computerized adaptive testing framework. Finally, one contribution discusses the use of adaptive forms for monitoring mental health symptoms.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing / 633

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing

Authors: Lorenzo Viviani¹; Elisa Straulino²; Alba Liso³; Anna Anastaseni⁴; Tania Cerni⁵

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From the tap of a thumb on a smartphone screen to the deliberate keystroke on a keyboard, digital writing encompasses a spectrum of sensorimotor behaviors that offer insights into human cognition and motor control. Building upon the understanding of digital interaction, this symposium brings together distinct yet interconnected contributions that investigate how writing unfolds on touchscreen devices, combining ecological validity with fine-grained kinematic analysis.

The opening presentation offers a theoretical perspective framing mobile typing as a sensorimotor skill shaped by ergonomic, contextual, and individual factors, highlighting the need for ecologically valid and methodologically innovative approaches. The first presentation introduces novel markers of touch interaction—pressure and duration—demonstrating how generational and contextual factors influence motor strategies across digital tasks. The second study applies 3D motion analysis to thumbs movements, revealing distinct kinematic signatures for content consumption versus generation and linking motor efficiency to digital intentions. The last empirical contribution delves into the cascaded nature of orthographic and motor processing during smartphone writing, revealing how linguistic variables modulate temporal dynamics, supporting an integrated model of written production. The concluding discussion integrates these findings through the lens of kinematic fluency and linguistic complexity, emphasizing how individual differences and device experience shape writing performance, and advocates for a unified framework accounting for both cognitive-linguistic and sensorimotor dimensions of digital writing.

Together, the symposium offers a timely and nuanced view of mobile writing as a window into cognitive-motor integration, with implications for experimental psychology, digital literacy, and behavioral assessment.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovative approaches to sleep and well-being: Methodological and research implications / 900

The interplay between sleep health and peripartum psychological health in the family context: a prospective psychophysiological approach

Author: Debora Meneo¹

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Over 70% of peripartum women experience insomnia symptoms. Sleep difficulties increase psychological and health risks during peripartum. Longitudinal psychophysiological research is lacking. This ongoing longitudinal study include ecological-momentary assessment (EMA) and randomized controlled trial (RCT) designs to understand the interplay between physiological, hormonal and subjective indices of maternal sleep and psychopathology.

Women from early pregnancy (baseline) are assessed after 6 and 12 weeks (FU1-2), and at 1-to-2 weeks (FU3), 3- and 6-months post-partum (FU4-5). Included women are divided into those without (Group A) and those with sleep difficulties (Group B). Group B is randomly assigned to digital psychoeducational sleep intervention or a control condition (pregnancy information). A 7-days EMA design assesses sleep and emotions (sleep diary), sleep-wake parameters (actigraphy) and stress reactivity (salivary cortisol) at baseline, FU1 and FU5. Saliva samples are used for gene methylation as biomarkers of prenatal insomnia. Partners' and newborns' sleep is also assessed.

Among 41 interested women, 20 within the 2nd trimester have been enrolled (34.60 ± 4.11 years): 10 without and 10 with relevant insomnia symptoms. 2 participants reported moderate anxiety and 3 screened positive for risk of peripartum depression. Group B tended to report higher anxiety and depressive symptoms compared to Group A.

Currently, 6 participants gave birth. No pregnancy complications were reported.

The present prospective study aims to understand the psychophysiological mechanisms linking sleep health and peripartum psychopathology. This will contribute to interventive and preventive programs to reduce long-term consequences of sleep difficulties during early pregnancy.

Preregistration: <https://clinicaltrials.gov/study/NCT06379074>

Protocol: <https://doi.org/10.1186/s40359-024-01827-1>

If you're submitting a symposium talk, what's the symposium title?:

Innovative approaches to sleep and well-being: Methodological and research implications

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica / 497

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica

Authors: Federica Alfeo¹; Tiziana Lanciano²

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² *Università degli Studi di Bari Aldo Moro*

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Il processo decisionale rappresenta il risultato dell'integrazione di componenti cognitive, emotive e sociali, essenziali per comprendere, valutare e agire in situazioni complesse, spesso centrali nella vita quotidiana. Il presente simposio si propone di approfondire le dinamiche che regolano il decision-making e le difficoltà che possono emergere nel momento della scelta, attraverso contributi empirici condotti sia su individui sani sia su persone che presentano condizioni di vulnerabilità cognitiva, legate all'invecchiamento o a specifici quadri clinici.

La ricerca in psicologia generale, neuroscienze e ambito clinico converge nell'adozione di una prospettiva integrata, oggi imprescindibile per comprendere appieno l'interazione tra dimensioni cognitive, affettive, sociali e legate allo stato di salute, tutte coinvolte nella capacità di prendere decisioni consapevoli e socialmente adeguate. Compromissioni in uno o più di questi ambiti possono alterare il processo decisionale, con conseguenze sull'autoefficacia, sull'autostima e sulla qualità delle relazioni interpersonali, fino a favorire condizioni di isolamento e un generale peggioramento del benessere. Le evidenze presentate offriranno spunti teorici e applicativi utili non solo per una più profonda comprensione dei meccanismi alla base delle scelte, ma anche per progettare interventi mirati alla promozione dell'autonomia e del benessere in vari contesti. Il simposio intende valorizzare un approccio multidisciplinare allo studio del decision-making, un ambito ancora poco esplorato in modo applicativo nonostante le sue rilevanti implicazioni nei percorsi di salute e nella quotidianità.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Ageing as a Process of Adaptation and Evolution / 1008

Introduction

Corresponding Author: silvia.gobbo@unimib.it

New perspectives for developing short forms of tests / 913

Measuring the Stability of Adaptive Psychological Assessment

Author: Debora de Chiusole¹

Co-authors: Ottavia Epifania ²; Pasquale Anselmi ¹; Luca Stefanutti ¹

¹ *Università di Padova*

² *Università di Trento*

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While adaptive administration procedures are widely adopted in educational assessment, their application in psychological testing remains limited. A plausible reason for this delay may lie in the rigid administration rules required by classical test theory, that is all individuals receive the same items in the same order and must respond to all of them. These constraints are incompatible with the principles of adaptive testing, where the set and sequence of items vary across individuals. Nevertheless, adaptive procedures represent an effective way to obtain shorter and more personalized assessments, while still producing an estimate of the performance that refers to the full item pool. Adaptive testing algorithms have been successfully implemented within both Item Response Theory and Knowledge Space Theory (KST). The latter, introduced in 1985, was designed specifically to build an “efficient machine for assessment”. Despite the numerous successful applications, few statistical indices have been developed to evaluate the reliability and accuracy of adaptive assessments. This contribution, grounded in the framework of KST, introduces a novel index to estimate the stability of an adaptive assessment, conceived as the consistency between the obtained evaluation and the one that would have been obtained through a full test administration. Moreover, this index provides the foundation of a new adaptive assessment algorithm implementing a dynamic termination criterion. The utility and validity of the proposed index are shown through simulation studies and empirical applications based on a computerized test of fluid intelligence administered to both general and clinical populations.

If you're submitting a symposium talk, what's the symposium title?:

New perspectives for developing short forms of tests

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Ageing as a Process of Adaptation and Evolution / 514

Ageing as a Process of Adaptation and Evolution

Author: Silvia Gobbo¹

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Ageing is a complex phenomenon involving physical, social, and cognitive changes. While much of the literature has focused on cognitive decline—often seen as a progressive impairment to be addressed through targeted training—we propose a broader and more dynamic perspective. Rather than viewing ageing as a process of deterioration, we consider it an evolution and adaptation to new life challenges. One important but often overlooked area of change is personality. Contrary to the long-held belief that personality traits remain stable after a certain age, ageing can bring qualitative shifts in the organization of personality. These changes may reflect the individual's adjustment to the evolving demands of later life. Moreover, the relationship between personality and cognition also transforms with age, emphasizing the need for an integrated approach to understanding ageing. The predominant focus on cognitive impairment may also be shaped by societal stereotypes about older adults. This aspect will be explored in the symposium, particularly by examining differences in perception between familiar and unfamiliar older individuals. Importantly, what is often labeled as cognitive decline can be mitigated by factors such as cognitive and motor reserves, highlighting the plasticity of ageing. These constructs will also be addressed during the symposium. In sum, we argue that ageing is a vital phase of psychological transformation, characterized by reorganization

rather than decline. This symposium will explore ageing through the lenses of personality development, cognitive reorganization, modifiable protective factors, and the influence of age-related stereotypes.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovative approaches to sleep and well-being: Methodological and research implications / 694

Innovative approaches to sleep and well-being: Methodological and research implications

Author: Giorgia Degasperì¹

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Sleep is fundamental to physical and mental health and plays a critical role in overall well-being. While it is well-established that sleep disturbances are a risk factor for mental disorders, and that insomnia is a severe condition in itself, the assessment and monitoring of sleep have become increasingly important not only in clinical populations but also in the general population across all life stages, with a strong emphasis on prevention. In recent years, growing scientific interest in sleep research methodologies has led to the integration of both traditional and innovative approaches. Established techniques, such as polysomnography and actigraphy, have been complemented by newer methodologies, broadening research perspectives on the relationship between sleep and well-being. This symposium will explore the associations between sleep features and well-being across the lifespan. Debora Meneo will examine the impact of sleep during pregnancy and post-partum on the well-being of mother and child, presenting an innovative perspective on this critical period. Giorgia Degasperì will explore the association between sleep quality and eating worries in young adults, introducing an ecological approach to sleep research. Giulia Aquino will present an EEG analysis of the neural correlates of insomnia in adult patients, with a specific focus on slow oscillations and REM sleep, offering a novel approach to understanding the mechanisms underlying insomnia. Finally, Elisabetta Fasiello will investigate sleep alterations in aging, focusing on REM Sleep Behavior Disorder as an early marker of neurodegeneration, presenting an innovative perspective to advance early detection and intervention strategies.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica / 498

Moral Decision-Making in Real and Sacrificial Contexts: A Pilot Study on Social Cognition in Mild Cognitive Impairment

Authors: Federica Alfeo¹; Tiziana Lanciano²

¹ *Università degli studi di Bari*² *Università degli Studi di Bari Aldo Moro***Corresponding Author:** fed.alfeo@gmail.com

Prendere decisioni efficaci nei contesti sociali richiede la capacità di comprendere dinamiche interpersonali complesse, spesso caratterizzate da implicazioni morali. Questo processo è supportato dalla cognizione sociale, che può risultare compromessa in condizioni come il Mild Cognitive Impairment (MCI), una fase di transizione tra invecchiamento sano e patologico. In questi casi, le difficoltà decisionali possono ridurre il coinvolgimento sociale e accelerare il declino cognitivo.

Questo studio pilota ha esplorato la cognizione sociale e il processo decisionale morale in individui con MCI, confrontandoli con un gruppo di controllo sano. I partecipanti (N = 40; 20 MCI, 20 controlli) hanno completato una batteria di test per valutare la Theory of Mind (ToM), l'attribuzione emotiva, l'interpretazione di situazioni sociali e la distinzione tra norme morali e convenzionali. Le decisioni morali sono state indagate tramite scenari interattivi basati su video, che includevano dilemmi sacrificali e situazioni reali di natura morale o neutra. Sono stati registrati sia le scelte effettuate sia i tempi di risposta (RT), insieme a misure di riserva cognitiva, supporto sociale e percezione della solitudine.

Rispetto ai controlli, i partecipanti con MCI hanno mostrato una minore capacità di riconoscere comportamenti normativi e tempi di risposta più lunghi nei dilemmi a contenuto morale, ma non in quelli neutri. Inoltre, una maggiore riserva educativa era associata a scelte più deontologiche nell'intero campione. Questi risultati suggeriscono l'importanza di includere la valutazione delle decisioni morali nei percorsi clinici per sostenere l'autonomia e la partecipazione sociale nella terza età.

If you're submitting a symposium talk, what's the symposium title?:

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing / 653

Typing on the Move: Touchscreen interaction as a Tool for Investigating Sensorimotor Behavior

Author: Lorenzo Viviani¹

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As smartphones have become central to everyday digital interaction, typing on touchscreen keyboards has emerged as a compelling entry point for studying human sensorimotor behavior. This theoretical contribution explores the foundations of mobile typing as a motor skill, synthesizing a growing body of interdisciplinary literature that positions it as both a performance task and a behavioral indicator. The presentation examines how users learn to interact with flat, miniature keyboards and how they adapt motor coordination to device-specific constraints. Typing behavior is shaped by numerous factors, including ergonomic design, user habits, and contextual variability, challenging traditional definitions of typing expertise. At the same time, research in this field struggles with significant methodological limitations: many studies rely on constrained laboratory settings with low ecological validity, and standard performance metrics (such as words per minute) often overlook the nuanced motor strategies involved. However, emerging tools such as keystroke logging, real-world data collection, and inter-touch interval analysis offer new ways to capture the fine dynamics of mobile interaction. These methods not only reveal individual motor patterns, but also connect typing behavior to broader domains - including cognitive function, aging, and affective states - opening

the door to innovative applications in behavioral modeling and digital health. Ultimately, this talk aims to promote a more sensorimotor-aware and ecologically valid framework for studying mobile typing, highlighting its relevance as a rich site for understanding how humans interact with - and adapt to - technologically mediated environments.

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Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Ageing as a Process of Adaptation and Evolution / 534

Personality in healthy aging. Stereotypes and structural differences

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Traditional theories of personality, such as the HEXACO model, postulate a universal structure composed of six fundamental traits. However, aging involves significant changes in individuals' lives, including cognition and sociality, which can affect personality expression and perception. The present contribution presents two studies aimed at exploring the structure and evaluation of personality in the elderly population.

In the first study, 200 neurologically healthy participants over 65 completed two HEXACO questionnaires, as well as a well-being questionnaire (BEN-SSC). Factor analysis revealed structural differences in traits compared to young adults, suggesting a reorganization of the factors of Honesty-Humility and Agreeableness. These results indicate that aging can result in qualitative changes in the configuration of personality traits.

The second study investigated how young adults (N = 303) evaluate older adults, comparing perceptions towards a familiar senior individual and a generic group of older adults, using both the HEXACO model and the Stereotype Content Model. The results show more favorable ratings of known individuals than the group, with measures of personality being more context-sensitive than stereotypes, which remained more stable. Discrepancies between individual and group were associated mainly with the Honesty-Humility trait and warmth-related stereotypes and were related to the evaluator's degree of familiarity with older people.

Overall, these studies underscore the need to consider structural personality changes in later life and the importance of intergenerational contact in mitigating age-related stereotypes. Future research should expand these investigations to more diverse samples and investigate the long-term effects of familiarity on older people's perception.

If you're submitting a symposium talk, what's the symposium title?:

Ageing as a Process of Adaptation and Evolution

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing / 640

The Dance of Thumbs: Kinematic signature of Digital Intentions

Author: Elisa Straulino¹

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In daily life, humans produce complex and subtle hand and finger movements, such as playing instruments or typing on keyboards and touchscreens. Typing on smartphones is common in two main domains: (i) content consumption (e.g., browsing, reading news), and (ii) content generation (e.g., writing messages, posting on social media). Recent findings show that merely observing smartphone typing can reveal whether a user is consuming or generating content, suggesting that distinct kinematic cues characterize the two behaviors. Leveraging advanced 3D motion analysis techniques, this study investigates the temporal, spatial, and velocity characteristics of thumb movements during smartphone typing, aiming to reveal the underlying structure of digital intentions. Fourteen naïve participants were recorded while typing seven sentences on: (i) Google (content consumption), and (ii) WhatsApp (content generation). Anatomical landmarks were defined to develop a new 3-D model: the Dance of Thumbs (DoT). Movements of both thumbs were captured using six infrared cameras and a 3-D motion analysis system. Results indicate that: (i) significant kinematic differences exist between typing for content consumption and generation, and (ii) motor efficiency is higher in digital natives (born after 1980; Prensky, 2001). These findings offer new insights into sensorimotor representations of digital actions and intentions, expanding our understanding of embodied cognition in the touchscreen era. Moreover, this work contributes to the emerging framework of digital competence, a concept with potential applications in addressing digital exclusion.

If you're submitting a symposium talk, what's the symposium title?:

633 Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

New perspectives for developing short forms of tests / 575

More than a short form: Using adaptive assessments to optimize clinical insight from the first session

Authors: Andrea Brancaccio¹; Andrea Spoto²; Umberto Granziol²

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² *Dipartimento di Psicologia Generale, Università degli studi di Padova*

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Computerized adaptive assessment algorithms are a promising alternative to traditional fixed-length questionnaires in clinical assessment. Their ability to dynamically select the most informative items based on individual responses allows for substantial reductions in administration time while preserving the precision of trait estimation. As such, adaptive instruments function as personalized short forms, tailored to the respondent's profile, without sacrificing psychometric rigor. In this contribution, we propose that such instruments may also suggest possible trajectories in clinical status. Building on the framework of Formal Psychological Assessment, we adopt a methodological extension that exploits the concepts of frontier and neighborhood of outputs provided by adaptive instruments. The frontier consists of symptoms likely to emerge or remit as a mental disorder evolves, while the neighborhood includes adjacent clinical states into which the patient may plausibly transition. We tested this procedure using an adaptive version of a depression questionnaire, in a sample of 383 individuals from both clinical and non-clinical populations. We simulated adaptive assessments and tested whether the procedure could accurately infer the same clinical states, neighborhoods, and

frontiers as the full response pattern, with comparable probabilities.

The simulated outcomes resembled the originals but were obtained with fewer administered items, due to the adaptive nature of the tool. Moreover, the method enabled accurate estimation of frontier and neighborhood structures, offering a concise yet predictive clinical picture.

This approach shows how adaptive assessments can move beyond efficiency, providing clinicians with early-stage, data-driven hypotheses on disorder progression and supporting faster, more targeted therapeutic decisions.

If you're submitting a symposium talk, what's the symposium title?:

New perspectives for developing short forms of tests

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica / 934

The role of decision-making in syndromes characterized by chronic pain

Author: Livio Clemente¹

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¹ *University of Bari*

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Chronic pain is a complex and multidimensional neurological condition that profoundly affects the daily functioning of individuals, impairing physical, emotional, and cognitive aspects. Among chronic pain syndromes, fibromyalgia (FM) is distinguished by its high prevalence and association with subjective cognitive disorders, commonly known as “fibrofog.” Despite the growing interest in the neurocognitive correlates of FM, research on decision-making (DM) function remains limited, despite its fundamental role in daily life. The brain areas involved in the management of chronic pain, particularly the prefrontal cortex, overlap with those devoted to executive functions. This has the potential to generate interference that can impair the ability to make effective decisions, especially in situations of uncertainty or risk. The findings of this study indicate that the difficulties experienced by individuals with persistent pain do not exclusively stem from psychological comorbidities, such as anxiety or depression. Rather, these difficulties are the result of a multifaceted interaction between persistent pain, attentional dysregulation, and alterations in reward circuits. This image exerts a tangible influence on patients' day-to-day lives, impacting personal decisions, interpersonal relationships, and therapeutic choices. Greater clinical and scientific attention to these aspects could contribute to a more comprehensive understanding of the cognitive profile of syndromes characterized by chronic pain and foster more targeted interventions.

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Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Ageing as a Process of Adaptation and Evolution / 515

Aging as Adaptive Reorganization: A Network Analysis of Psychological, Cognitive, and Personality Traits Across the Lifespan

Author: Stefano Vicentin¹

Co-author: Giorgia Cona¹

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Aging refers to a series of changes occurring throughout the lifespan in physical and mental health, cognitive abilities, and personality traits. While aging has often been associated with a progressive and inevitable decline, recent findings suggest that this is not the case for many variables. Given the adaptive nature of this process, it is crucial to investigate the relationships among psychological, cognitive, and personality factors at different life stages, hypothesizing that not only do these aspects change over time, but so does the architecture of their interrelationships.

To investigate this, we analyzed the relationships among 31 measures from the Human Connectome Project (HCP) in three age groups: Young (22-35), Middle-aged (36-59), and Older (60-100) adults. Data were examined from a network perspective, investigating their tendency to cluster into communities (Exploratory Graph Analysis, EGA) and assessing group-related differences in both global and local network properties (Network Comparison Test, NCT).

Our findings reveal substantial differences between age groups, supporting the view of aging as an adaptive reorganization process. Six distinct communities emerged in the Young group, while in the Middle-aged and Older groups, variables clustered into four, indicating a reduction in segregation. Additionally, older adults' networks showed lower global strength, indicating a shift towards more integrated but less differentiated associations.

These patterns align with the dedifferentiation theory, suggesting that aging involves a reduction in domain specificity as the boundaries between cognitive, psychological, and personality variables become less distinct, potentially increasing the support each function provides to the others.

If you're submitting a symposium talk, what's the symposium title?:

Ageing as a Process of Adaptation and Evolution

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovative approaches to sleep and well-being: Methodological and research implications / 697

Are eating worries and sleep quality associated in daily life? An exploratory ecological study

Authors: Giorgia Degasperì^{None}; Luca Menghini¹; Costanza Colombo¹; Valentina Cardì¹; Nicola Cellini¹

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Introduction: Previous research has shown a strong link between sleep and eating patterns. However, when considering disordered eating behaviors, such as in eating disorders, findings are less consistent. Some studies report reduced sleep quality in individuals with bulimia nervosa and, more notably, anorexia nervosa, but further research is needed to clarify these relationships.

Method: Seventy-five participants (59 female; M age = 23.4, SD = 2.2) took part in the study. We used an ecological momentary assessment (EMA) paradigm to examine within-person associations between self-reported sleep quality and eating-related worries (i.e., concerns about body shape or daily food intake). We also assessed participants' risk for developing an eating disorder to explore

whether associations were stronger in those at risk. Participants completed seven surveys per day for 14 days via the mobile application m-Path. Linear mixed-effects models were implemented in R, with a model comparisons approach based on Akaike Information Criterion (AIC) and Likelihood Ratio Test. Both methods (<https://osf.io/by3qn>) and analyses (<https://osf.io/y8ra2>) were pre-registered on OSF.

Results: Individuals at risk for eating disorders reported lower sleep quality and higher eating-related worries. However, no significant associations were found between sleep quality and eating worries in either direction, nor did risk status moderate these relationships.

These results suggest that even in the early risk phase, individuals may experience poorer sleep and heightened body- and food-related concerns. This study highlights the value of EMA in investigating these dynamics in daily life and underscores the need for further research into their underlying mechanisms.

If you're submitting a symposium talk, what's the symposium title?:

Innovative approaches to sleep and well-being: Methodological and research implications

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

New perspectives for developing short forms of tests / 572

Shortening tests within competence-based knowledge space theory

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Tests covering broad subject areas may consist of many items, resulting in long and tiring assessments. Nevertheless, computerized adaptive testing may not be a viable solution if the necessary hardware is unavailable or if fairness issues arise. The talk is framed within competence-based knowledge space theory, which enables the assessment of the latent set of attributes (such as skills or symptoms of a disorder) that characterize an individual based on their observed responses to test items. A procedure is presented that allows for the construction of shortened forms of a given test that are as informative about each individual's attributes as the original test. The shortened forms may differ in the items selected from the original test, but are the same in terms of the assessment of individuals' attributes. Additionally, the procedure allows for the construction of shortened forms that are minimal in the sense that no further items can be removed without reducing informativeness. A real-life application is presented in which a shortened form of a well-known fraction subtraction test is developed. This form consists of nine items appropriately selected from the original 20-item test. Analysis of the responses of 536 middle school students shows that the shortened form yields assessments that closely resemble those obtained with the original test and outperforms other short tests of the same length.

If you're submitting a symposium talk, what's the symposium title?:

New perspectives for developing short forms of tests

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing / 672

Touching Intentions: Pressure and Duration as Behavioral Markers of Smartphone Typing Across Generations and Contexts

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Mobile typing is a widespread activity. Despite its ubiquity, mobile typing has predominantly been examined in controlled, low-ecological settings. The focus has often been limited to conventional metrics such as speed and error rate. The present study adopts a novel methodological approach to investigate behavioral aspects of mobile typing that have received limited attention —specifically, touch pressure and the duration of screen contact. Data were collected in environments designed to more closely approximate naturalistic smartphone use. For this purpose, a custom-developed Android application (SMoDS) was employed, specifically designed to explore sensorimotor parameters during touchscreen interaction.

Participants were assigned to two generational cohorts —Digital Natives and Digital Immigrants (Prensky, 2001) —and engaged in two common smartphone activities: social content generation (chatting) and individual content consumption (web search). This experimental design enabled comparative analyses across both generational groups and task contexts.

Results indicated that both the touch pressure and duration were modulated by task type and generational group. Although the effects were not consistently observed across all conditions, the emerging patterns suggest that motor strategies may be shaped by task demands and by users' generational affiliation.

By introducing touch pressure and duration as complementary behavioral markers of mobile typing, this study contributes to the refinement of methodological tools in touchscreen interaction research and provides insights into the ways motor behavior adapts across digital environments and user profiles.

If you're submitting a symposium talk, what's the symposium title?:

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Ageing as a Process of Adaptation and Evolution / 777

The Predictive Role of Cognitive Reserve in Adulthood and Aging

Author: Ilaria Corbo¹

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Cognitive reserve (CR) is the ability of the brain to facilitate higher cognitive performance despite significant life-related brain changes during aging. Thus, CR may play a relevant role in protecting against pathological aging. Generally, CR is estimated by questionnaires evaluating schooling, working, and leisure time. Executive functions are high-level cognitive processes (e.g., inhibition, working memory, planning, problem-solving) that are strongly associated with daily living skills. In this perspective, the present study investigates how CR differs by age and how this may predict good executive functioning (EFs).

Three hundred and sixty-four participants (range: 50-88) were selected and divided by age. After anamnestic data collection, participants were interviewed to assess CR (Cognitive Reserve Index, CRI); then, EFs (working memory, phonemic fluency, cognitive flexibility, and fluid intelligence) were assessed. Different analyses were performed. Regression analysis revealed that EFs were predicted by age, schooling, working, and leisure time ($R^2=0.10$; $p<0.001$), and mediation analysis highlighted that age is a mediator of the relationship between CR and EFs. In conclusion, CR can predict executive functioning in adulthood and aging. These findings may be useful for interventions to enhance CR across the lifespan and consequently improve executive functioning, which is critical for daily independence and successful aging.

If you're submitting a symposium talk, what's the symposium title?:

Ageing as a Process of Adaptation and Evolution

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica / 787

Il decision making emotivo e il Readiness Potential: evidenze EEG sui meccanismi pre-risposta

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La categorizzazione emotiva di stimoli verbali prevede l'integrazione di informazioni semantiche ed emotive, attivando meccanismi decisionali che coinvolgono strutture corticali e sottocorticali. In questo contesto, l'elettroencefalografia (EEG) è uno strumento utile per studiare i processi decisionali legati alla risposta comportamentale emotiva segregandoli dai processi di elaborazione dello stimolo. Solitamente, le ricerche EEG si sono focalizzate su segnali time-locked allo stimolo. Tuttavia, studi sottolineano l'importanza di analizzare epoche centrate sulla risposta, per indagare i processi preparatori e decisionali che anticipano l'azione. Un indice elettrofisiologico chiave per l'indagine del processo decisionale è il Readiness Potential (RP), un potenziale lento negativo che emerge circa 1-2 secondi prima di una risposta volontaria, riflettendo l'attivazione di aree motorie e premotorie coinvolte nella preparazione dell'azione.

Obiettivo del nostro studio è quello di esplorare l'attività neurale pre-risposta in un compito di categorizzazione affettiva a tre scelte (positivo, negativo, neutro) in cui i partecipanti valutano il contenuto emotivo delle singole parole. I segnali EEG sono stati epocati time-locked alla risposta e analizzati per isolare l'andamento del RP, con attenzione alle differenze di valenza emotiva e alle caratteristiche individuali. I risultati preliminari evidenziano un RP con maggiore ampiezza nelle risposte a parole con accezione negativa, cosa che suggerisce una maggiore attivazione dei meccanismi di preparazione della risposta per quei contesti emotivamente più salienti.

Questi primi dati suggeriscono che il RP può rappresentare un indice utile per lo studio del link cognitivo-emotivo alla base del comportamento decisionale in contesti emotivi.

If you're submitting a symposium talk, what's the symposium title?:

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Innovative approaches to sleep and well-being: Methodological and research implications / 801

Exploring EEG Complexity in REM and NREM Sleep: Insights into Insomnia Disorder

Author: Giulia Aquino¹

Co-authors: Andrea Piarulli ¹; Marta Orlandini ¹; Kai Spiegelhalder ²; Bernd Feige ²; Angelo Gemignani ¹

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Background:

Insomnia disorder has been associated with altered EEG dynamics during both slow-wave and REM sleep. The REM sleep instability hypothesis has recently emerged as a novel framework for understanding insomnia, though EEG studies remain limited. EEG complexity, which reflects the richness and variability of temporal brain activity, may provide new insights into the dynamic organization and informational content of sleep in ID. This study aimed to explore alterations in slow-wave and REM sleep in insomnia patients using EEG-based complexity metrics.

Methods:

Overnight polysomnographic recordings from 45 insomnia patients and 50 age- and sex-matched good sleepers were analyzed. EEG signals were corrected for EOG artifacts, and three mastoid-referenced channels (Fz, C3, C4) were selected. Objective sleep parameters were extracted. EEG complexity was quantified using two Lempel-Ziv compression approaches: (i) global thresholding across the entire night and (ii) local thresholding for each 30-second epoch. Exploratory statistical analyses used independent t-tests.

Results:

Using the locally thresholded Lempel-Ziv method, insomnia patients showed significantly higher EEG complexity during REM sleep compared to good sleepers, across all channels ($p = 0.03$) and specifically at Fz ($p = 0.009$). A trend toward significance also emerged at Fz during NREM sleep ($p = 0.05$).

Conclusion:

Although preliminary and exploratory, these findings suggest that EEG complexity, particularly within the REM sleep instability framework, may reveal neurophysiological mechanisms underlying insomnia. By detecting subtle alterations in brain dynamics, complexity metrics offer promising clinical and neuroscientific insights into the quality of restorative sleep and its impact on daytime functioning in insomnia.

If you're submitting a symposium talk, what's the symposium title?:

Innovative approaches to sleep and well-being: Methodological and research implications

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing / 719

The dynamics of word production in smartphone writing: evidence for cascaded processing from kinematic data

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Writing is a complex cognitive activity involving both orthographic and motor components. Over time, these processes have evolved in response to changes in writing media. The dual-route theoretical approach considered that orthographic and motor processes function independently and in a sequential fashion: once spelling retrieval is over motor execution begins (McCloskey Rapp, 2017). Other studies using real-time writing data suggest that orthographic and motor processes interact and overlap temporally, such that spelling processes modulate the kinematics of motor production. During the symposium, we will present the results of three smartphone writing to dictation experiments in French and Italian. The kinematic analyses revealed that orthographic and motor processes are active simultaneously. Once the orthographic representation of the letter string is retrieved, syllables appear to serve as functional units to keep information active at both motor and orthographic levels. The data suggest that for polysyllabic words such as the Italian word *scherma* (/sker.ma/, fencing), peripheral processes begin after the first syllable (/sker/ = <scher>) is processed. While writing the letters of the initial syllable, we continue with the orthographic processing of the second syllable (<ma>). Moreover, linguistic variables - such as word length, orthographic consistency, and orthographic deepness - significantly influence the temporal dynamics of smartphone writing. This confirms an integration between orthographic and motor processes, supporting the idea of cascading functioning proposed by the APOMI model (Kandel, 2023). The use of kinematic data thus proves to be a powerful tool for deepening our understanding of the mechanisms underlying written production.

If you're submitting a symposium talk, what's the symposium title?:

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

New perspectives for developing short forms of tests / 573

Natural selection for items: Evaluating a genetic algorithm for developing questionnaire short forms

Authors: Marcello Passarelli^{None}; Laura Casetta¹; Luca Rizzi¹; Carlo Chiorri²; Francesca Cassina²; Sandro Voi³; Diego Rocco⁴

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When developing short forms of questionnaires, the most common approach under classical test theory is to retain the items with the highest factor loadings on each factor. Although this strategy generally produces short forms that perform well on standard reliability and validity metrics, it can unduly narrow the construct being measured by favouring highly correlated, homogenous items.

This study evaluates an alternative method: the genetic algorithm proposed by Tal Yarkoni (2010), a simple machine learning-based approach to item selection. We tested its performance using both simulated data and real-world data across three different types of scales: a highly redundant unifactorial scale, a less redundant unifactorial scale, and a three-factor scale with low item content overlap. Evaluation criteria included correlation between short and full scale scores, internal consistency (Cronbach's alpha), and preservation of correlations with related constructs.

Compared to the traditional highest-loading method, the genetic algorithm yielded short forms with stronger correlations with full-scale scores (.93–.99 vs. .89–.98) and better preservation of construct validity, as indicated by smaller shifts in correlations with related constructs (standard deviation of differences: .014–.038 vs. .020–.096). However, the genetic algorithm produced slightly lower internal consistency (.74–.84 vs. .77–.92), due to its tendency to select more diverse items.

Overall, results suggest that the genetic algorithm represents a computationally efficient method to develop short forms that better retain the conceptual scope and external validity of the original instrument.

If you're submitting a symposium talk, what's the symposium title?:

New perspectives for developing short forms of tests

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Ageing as a Process of Adaptation and Evolution / 525

Motor Reserve and Current Physical Activity on Cognitive Performance, in elderly: Never too late to start exercise

Author: Giulia Sebastianutto^{None}

Co-authors: Sonia Montemurro¹; Dilan Barışan ; Massimo Nucci ; Sara Mondini

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Cognitive performance tends to decline with aging; however, numerous studies have highlighted the protective effects of physical exercise which contributes to better oxygenation and vascular supply to the brain (Goenarjo et al., 2020; Chung et al., 2008). The present study investigated the impact of both Motor Reserve (MR), a cumulative measure of lifetime physical activity and Current Physical Activity (CPA), measured over the past year, on cognitive performance.

On a sample of 727 elderly individuals (from 64 to 104 y.o.) and with different levels of MR, Pearson's correlations showed that those who are currently physically active (high CPA) demonstrate better cognitive performance than those who are less active (low CPA), even if the latter accumulated more MR. In other words, CPA has a strong and consistent positive association with cognitive performance, regardless of MR accumulated over life.

Regression analyses showed that considering also Age, MR predicts cognition ($\beta = 0.31$, $p < 0.001$), but after including CPA ($\beta = 0.85$, $p < 0.001$) then MR is not a significant predictor ($\beta = -0.05$, $p = 0.58$).

In conclusion, CPA appears to be more important for cognition than MR, suggesting that, regardless

of past motor physical activity, current physical activity plays a more crucial role for cognition. In other words, what matters most is the physical activity you are doing now, rather than what you did in the past.

If you're submitting a symposium talk, what's the symposium title?:

Ageing as a Process of Adaptation and Evolution

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

New perspectives for developing short forms of tests / 566

Will the suffering ever end? An item response theory algorithm for shortening tests

Author: Ottavia Epifania¹

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Item Response Theory (IRT) provides an ideal framework for shortening existing tests given the detailed information on the measurement precision of each item with respect to different levels of the latent trait. As such, brief yet psychometrically sound short test forms (STFs), can be developed to prevent the loss of quality in the response process due to the respondents' fatigue. This contribution focuses on the estimation of the latent trait levels, which is done in three scenarios considering: (i) all the items in a full-length test without accounting for the effect of response fatigue, (ii) all the items in a full-length test accounting for the effect of response fatigue, and (iii) a subset of items selected by an algorithm (Léon) designed for developing informative STFs while accounting for the respondents' fatigue. In this application, the response fatigue has been operationalized by moving down the upper asymptote of the probability of correctly responding to an item. The results of a simulation study indicate that administering all items without accounting for the response fatigue lead to biased estimates of the latent trait, especially of the medium-high levels. This bias can be prevented by administering a subset of items, carefully chosen to approximate the measurement precision that would have been obtained if all items were administered.

If you're submitting a symposium talk, what's the symposium title?:

New perspectives for developing short forms of tests

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Innovative approaches to sleep and well-being: Methodological and research implications / 529

REM Sleep Behavior Disorder as a unique window into degeneration: the role of sleep, dreaming, cognition and mood

Authors: Elisabetta Fasiello¹; Serena Scarpelli²; Caterina Leitner³; Andrea Galbiati⁴

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Sleep is fundamental for physical, emotional, and cognitive well-being across the lifespan, with its restorative functions becoming increasingly critical in aging. In older adults, sleep alterations are not only frequent but may also signal the early onset of neurodegenerative processes. Among these, REM sleep Behavior Disorder (RBD) has emerged as a key model representing a prodromal stage of alpha-synucleinopathies. Studying sleep and its disruptions in late life provides a unique window into brain health, offering early biomarkers. In this context, this contribution aims to retrace literature and experimental evidence focused on the investigation of electrophysiological, cognitive, and psychological markers predictive of RBD phenoconversion. Particular emphasis will be given to Slow Wave Activity (SWA), hallmark of non-REM (NREM) sleep, which plays a crucial role in brain waste clearance and has been increasingly linked to neurodegenerative risk. Moreover, SWA reduction has been associated with memory and executive function decline during aging and in neurodegenerative conditions. Moreover, experimental evidence about the association between dreaming features and cognitive functioning in RBD will be examined. Beyond the electrophysiological and cognitive markers, the role of mood symptoms in neurodegenerative trajectories will be addressed. In synucleinopathies, psychiatric comorbidities accelerate disability, increasing the risk of late-stage complications and leading to poor quality of life. This contribution highlights how the knowledge of RBD offers a unique perspective on the early signs of neurodegeneration, enriching the discussion on sleep and quality of life across the lifespan and reinforcing the relevance of experimental psychology in advancing early detection and intervention strategies.

If you're submitting a symposium talk, what's the symposium title?:

Innovative approaches to sleep and well-being: Methodological and research implications

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica / 650

Processi decisionali nelle valutazioni psicopatologico-forensi: analisi su 489 perizie italiane

Authors: Pietro Pietrini¹; Giovanna Parmigiani²; Folco Panizza¹; Daria Mikhaylova³; Simona Casale¹

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Le valutazioni psicopatologico-forensi sulla capacità d'intendere e di volere rappresentano un momento cruciale del processo penale, con importanti ricadute sul destino dell'imputato e sull'impiego delle risorse pubbliche. Decisioni distorte possono condurre a esiti opposti ugualmente problematici: la piena condanna di soggetti totalmente o parzialmente non imputabili, che accedono al sistema penitenziario senza cure adeguate; oppure l'assoluzione di soggetti imputabili, che accedono impropriamente al circuito psichiatrico-forense.

Questo studio ha analizzato 489 perizie redatte tra il 2006 e il 2022 da psichiatri forensi nominati dai giudici per valutare la capacità di intendere e di volere. I dati, estratti manualmente, riguardano: età

e sesso dei periti; condizioni sociodemografiche dell'imputato, profilo clinico-diagnostico e precedenti penali dell'imputato e caratteristiche del fatto-reato.

L'analisi, condotta tramite metodi di Knowledge Representation and Reasoning e association rules, ha evidenziato quattro principali risultati:

1. il vizio parziale è stato riconosciuto con maggiore frequenza negli anni più recenti, evidenziando un cambiamento nelle valutazioni peritali;
2. i casi con sintomatologia più grave risultano più frequentemente associati a giudizi di imputabilità totalmente o parzialmente esclusa;
3. emerge una maggiore propensione a ritenere imputabili gli uomini rispetto alle donne;
4. il riconoscimento del vizio parziale di mente risulta più probabile nei casi che coinvolgono una vittima di sesso femminile.

Questi primi risultati suggeriscono una riflessione sui possibili criteri che orientano il giudizio peritale e offrono spunti per promuovere standardizzazione e maggior trasparenza nei processi valutativi in ambito psichiatrico-forense.

If you're submitting a symposium talk, what's the symposium title?:

Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing / 644

From Graphemes to Movements: How Language and Motor Skills Shape Word Written Production

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Kinematic analysis of writing movements offers a valuable window into the cognitive and motor processes involved in written language production. Traditionally employed to assess motor fluency, such analysis also provides insights into how linguistic variables—such as lexicality, orthographic complexity, or syllabic structure—affect the timing and dynamics of writing. This presentation focuses on how kinematic data can be used to investigate the interplay between linguistic variables and motor control, comparing handwriting and typing performance, and with a particular emphasis on typing.

Drawing on recent empirical studies with adults and adolescents, I illustrate how writing fluency is modulated not only by linguistic complexity, but also by experience with the input device and individual differences in both sensorimotor and linguistic skills. While linguistic complexity shapes the dynamics of processing during writing execution, more experienced typists show reduced sensitivity to such constraints due to automatized motor patterns. In contrast, less experienced writers tend to exhibit longer latencies and inter-key intervals when processing linguistically or motorically demanding elements, especially in the presence of poor linguistic skills. Additionally, asymmetries in motor skills between the dominant and non-dominant hand can further impact typing fluency.

These findings highlight the need to consider both cognitive-linguistic and sensorimotor factors in the study of written language production. Adopting an integrated perspective offers deeper insights into the development of writing skills and the interplay between motor execution and the linguistic context.

If you're submitting a symposium talk, what's the symposium title?:

Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Ageing as a Process of Adaptation and Evolution / 545

RF12: A Brief Tool for Identifying Modifiable Dementia Risk Factors in Healthy Adults

Author: Paola Angelelli¹

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The Lancet Commission report (Livingston et al., 2020) offers an updated, comprehensive overview of dementia prevention, identifying twelve modifiable risk factors within a life-course model. This approach highlights how exposures and behaviors across life stages contribute to dementia risk and provides a basis for early, multifaceted prevention strategies.

This study evaluates the psychometric properties and predictive validity of the RF12, a concise tool assessing twelve modifiable dementia risk factors in cognitively healthy adults. A total of 609 participants completed both self- and informant-report versions of the RF12, alongside cognitive tests (MMSE, MoCA, SATURN, FAB) and a depression scale (GDS). A significant but modest correlation between self- and informant-reports ($\rho = .325$, $p < .001$) suggests a possible self-other knowledge asymmetry.

All RF12 versions were significantly associated with cognitive performance and depressive symptoms, with the self-report proving most informative in incremental validity analyses. A weighted RF12 version—based on relative risk weights from the Lancet Commission's report—showed the strongest correlations with cognitive scores but did not improve model fit beyond simpler versions. Notably, the self-report RF12 added predictive value beyond education, especially for MoCA and SATURN scores.

These findings support the RF12 self-report as a low-burden, informative tool for assessing dementia risk in non-clinical populations. While informant-reports may be a useful alternative when self-reports are unavailable, their added value appears limited. The RF12's association with depressive symptoms also points to its broader relevance for cognitive-affective health. Future research should examine its longitudinal predictive validity and cross-cultural applicability.

If you're submitting a symposium talk, what's the symposium title?:

Ageing as a Process of Adaptation and Evolution

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

New perspectives for developing short forms of tests / 1010

General Discussion

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Unpacking Digital Dexterity: Cognitive and Sensorimotor Perspectives on Mobile Typing / 1027

Discussion

Ageing as a Process of Adaptation and Evolution / 1009

General Discussion

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Scelte nei contesti di salute e vulnerabilità cognitiva: un'analisi sul decision-making in popolazione sana e clinica / 1021

Discussione e domande

Innovative approaches to sleep and well-being: Methodological and research implications / 1040

Open Discussion

Sleep / Space, time, number / 994

The effect of posture and inter-manual distance on audio-tactile interaction: a developmental study

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The Crossed-Hands Deficit (CHD)—a performance cost in spatial localization tasks when hands are crossed—stems from conflicts between body-centered and external reference frames. While this phenomenon is well-established, the role of inter-manual distance and its interaction with posture in shaping audio-tactile integration remains largely unexplored, particularly from a developmental perspective. In this study, adults ($n = 12$) and children aged 6 to 15 ($n = 24$) performed an auditory localization task where target sounds were delivered on each hand, either alone or paired with a synchronous tactile stimulus (either on the same hand or the opposite hand). The task was carried out across different postures (crossed vs. uncrossed) and hand distances (close, medium, far). Results revealed that the CHD affected both children and adults but manifested differently across age groups. Adults showed performance costs primarily in the close-hand condition, suggesting an ability to use spatial distance to resolve reference frame conflicts. In contrast, children exhibited a more generalized deficit, with performance impaired by hand crossing regardless of distance. This pattern was especially pronounced in younger children, who displayed reduced accuracy in crossed conditions and heightened sensitivity to incongruent tactile cues. Crucially, younger children resulted incapable of localizing a sound presented solo when their hands were crossed, suggesting that audio-proprioceptive integration is still immature and congruent tactile information necessary to perform the task. These findings highlight the developmental trajectory of multisensory spatial processing and introduce inter-manual distance as a critical, yet previously underexamined, factor in resolving cross-modal spatial conflicts.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Life cycle / 915

Neuropsychological Profiles, Sleep Disorders, and Behavioral Adaptation in Smith-Magenis Syndrome: Clinical Correlates and Rehabilitation Perspectives

Author: Luca Liberati¹

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Objective: This study aims to identify neurobiological correlations between cognitive, emotional/behavioral, and adaptive functioning, sleep disorders, and specific neuropsychological domains in individuals with Smith-Magenis Syndrome (SMS). A secondary aim is to define more effective rehabilitation strategies targeting deficient domains to support functional and adaptive improvement.

Participants and Methods: The study included 45 individuals with SMS (ages 0–33). Two assessments were conducted: the first examined cognitive, adaptive, and emotional/behavioral development; the second explored sleep disorders and neuropsychological areas such as attention and visuomotor integration. Instruments used included WISC-IV, WAIS-IV, CBCL, Vineland-II, Bells Test, VMI, SDSC, and the Self-Injurious Behavior Scale (SRCA).

Results: Cognitive assessments showed global impairments, with significantly below-average IQ scores (FIQ, VCI, VSI, WMI, PSI). Adaptive functioning was also notably reduced. A strong correlation was found between IQ and adaptive behavior ($p < 0.001$). Emotional and behavioral results showed borderline or low scores, especially on Externalizing and Total Problems Scales. Self-directed aggressive behaviors correlated with internalizing traits ($p < 0.001$), affecting adaptive outcomes ($p < .05$). Neuropsychological testing revealed marked deficits in selective/sustained attention ($p < 0.001$) and visuomotor integration ($p < .01$). Sleep disturbances—mainly DIMS and SWTD—were frequent. Sleep Breathing Disorders correlated with externalizing symptoms ($p < 0.001$); excessive sleepiness was linked to internalizing traits ($p < .01$), more evident in males ($p < .05$).

Conclusion: The data suggest neurophysiological links between sleep regulation and neurobehavioral functioning in SMS, potentially influenced by genetic and epigenetic mechanisms. Identifying these correlations is key to developing targeted, effective rehabilitation strategies.

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Reasoning and abstract cognition / 794

Cognizione tecnologica: un modello neurocognitivo integrato**Author:** Giovanni Federico¹¹ Suor Orsola Benincasa University, Naples, Italy**Corresponding Author:** research@giovannifederico.net

Lo studio della cognizione tecnologica costituisce un'area emergente delle neuroscienze cognitive volta a indagare i meccanismi neurali e cognitivi che consentono agli esseri umani di comprendere, manipolare e interagire con artefatti tecnologici a diversi livelli di complessità. In questo contributo introduco un modello neurocognitivo integrato di comprensione del mondo fisico, di tipo *hub-and-processors*, in cui moduli specializzati (*processors*) convergono in snodi centrali (*hubs*) per supportare le componenti multimodali della cognizione tecnologica.

Il modello identifica nel lobo temporale anteriore un *hub* deputato alla codifica concettuale, nel pre-cuneo un *hub* per l'elaborazione visuospatiale, nella corteccia parietale inferiore un *hub* implicato nella comprensione delle proprietà meccaniche del mondo fisico e nel giro frontale inferiore uno *scheduler* responsabile dei processi di controllo esecutivo, flessibilità cognitiva e *buffering* delle informazioni. Aree mediali frontali e insulari sono inoltre coinvolte nella componente socio-cognitiva legata all'uso di tecnologie digitali.

Presenterò evidenze comportamentali e di *neuroimaging*, sia pubblicate sia inedite, a supporto dell'esistenza di vie neurali dissociabili per l'elaborazione di tecnologie meccaniche e digitali (Federico et al., 2025; *NeuroImage*), suggerendo una specializzazione funzionale in base alla natura dell'artefatto. Saranno discussi anche recenti sviluppi teorici elaborati dal nostro gruppo, tra cui il concetto di *technical reasoning* e il superamento della dicotomia *copying vs reasoning* nella trasmissione culturale tecnologica (Osiurak, Claidière & Federico, 2023; *Trends in Cognitive Sciences*).

Questo framework intende offrire una cornice unificata per lo studio della cognizione fisica, estendendone l'applicazione alla comprensione delle interazioni con l'ambiente tecnologico contemporaneo, con rilevanti implicazioni teoriche, cliniche e applicative.

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Emotions and motivation 2 / 560

Il ruolo dell'empatia di tratto nel decision making morale: risultati di uno studio sui tratti di personalità borderline**Author:** Pasquale Zappimpulso¹**Co-authors:** Federica Alfeo²; Tiziana Lanciano¹¹ Università degli Studi di Bari Aldo Moro² Università degli studi di Bari

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Il decision making morale è frequentemente associato all'empatia, ma il ruolo specifico dell'empatia affettiva di tratto rimane poco esplorato. Il presente studio ha indagato l'influenza di elevati livelli di empatia affettiva sulle scelte morali, considerando i tratti borderline di personalità (BP), noti per la loro accentuata sensibilità emotiva. Un campione di 78 partecipanti non clinici è stato valutato rispetto ai tratti BP e coinvolto nella risoluzione di dilemmi morali, che richiedevano decisioni con esiti deontologici (lasciare morire cinque persone) o utilitaristici (sacrificare una persona). Sono stati misurati l'empatia disposizionale, le scelte morali, le reazioni emotive e i tempi di risposta. I risultati mostrano che livelli più elevati di tratti BP sono associati a una maggiore empatia affettiva, in particolare al disagio personale, e a emozioni negative più intense a seguito delle decisioni morali. In generale, però, né i tratti BP né l'empatia disposizionale hanno predetto in modo significativo la frequenza delle scelte deontologiche né i tempi di risposta. Un'eccezione rilevante è rappresentata dalla labilità emotiva, una sottodimensione dei tratti BP, che è risultata associata a una minore incidenza di scelte deontologiche, suggerendo una propensione verso decisioni di tipo utilitaristico. Questi risultati mettono in luce la complessità del ruolo della sensibilità emotiva nel giudizio morale e offrono indicazioni importanti su come specifici tratti di personalità possano influenzare il processo decisionale morale, anche in popolazioni non cliniche.

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Action and Movement / 811

Verso uno studio comparato della handedness nelle piante

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Le asimmetrie funzionali rappresentano un modo per adattarsi alle diverse condizioni ambientali che sono in continuo cambiamento. L'esempio più evidente di asimmetria cerebrale nell'uomo è la dominanza manuale (handedness) nei diversi compiti motori e manipolatori quotidiani. Seppur la maggioranza degli esseri umani è destrimane, è presente una forte variabilità individuale e non è ancora chiaro se una così marcata preferenza sia effettivamente riscontrabile nelle specie non umane. Negli animali, compresi gli esseri umani, la preferenza manuale è strettamente associata alla presenza di un sistema nervoso. Recenti studi hanno messo in discussione questa idea, dimostrando come anche organismi privi di sistema nervoso, come le piante, presentano comportamenti e processi molto simili a quelli osservati nelle diverse specie animali. Tali evidenze hanno suggerito che una struttura neurale non è necessariamente indispensabile per supportare determinate abilità ma non sappiamo se sia possibile estendere questa considerazione anche alla handedness. È possibile ipotizzare uno scenario in cui indagare la variabilità e la stabilità e la consistenza della handedness nelle piante? La risposta è potenzialmente sì, ma con grande cautela. Un approccio che potrebbe chiarire diversi aspetti funzionali della handedness nelle piante è l'analisi cinematica tridimensionale del movimento che consente di definire l'andamento temporale delle variazioni di posizione e orientamento del corpo, o di una sua parte, in termini di traiettorie, velocità e accelerazioni. Studi sistematici caratterizzati dall'uso di metodi critici e specifici possono contribuire a identificare, definire e valutare gli aspetti funzionali della handedness nelle piante, come ampiamente documentato in diverse specie animali.

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Asimmetrie strutturali, funzionali e comportamentali: diversità ed evoluzione

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Emotions and motivation 2 / 758

L'espressione dell'osservatore influenza la percezione ma non la memoria di volti emotivi

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Questo studio indaga l'influenza della manipolazione del muscolo facciale zigomatico, attivo quando sorridiamo, su percezione e memoria a lungo termine di volti emotivi.

Nell'Esperimento 1, i partecipanti hanno valutato la valenza di volti arrabbiati, neutri e felici mentre tenevano una penna tra i denti (attivazione zigomatico) oppure tra le labbra (inibizione zigomatico). I risultati hanno evidenziato un'interazione significativa tra tipologia di emozione dei volti e manipolazione del muscolo zigomatico: i partecipanti con la penna tra i denti valutano i volti felici come più positivi rispetto a quelli con la penna tra le labbra, mentre i partecipanti con la penna tra le labbra valutano i volti arrabbiati come più positivi rispetto a quelli con la penna tra i denti.

Nell'Esperimento 2 abbiamo valutato la memoria a lungo termine presentando, in fase di codifica, gli stessi volti dell'Esperimento 1. Dopo aver svolto un compito distrattore, metà dei partecipanti ha completato la fase di riconoscimento con la penna tra i denti e l'altra metà con la penna tra le labbra. Nella fase di riconoscimento sono stati presentati gli stessi volti mostrati alla codifica e alcuni stimoli filler. I risultati non hanno evidenziato differenze significative né in termini di accuratezza né di tempi di riconoscimento nelle due condizioni sperimentali.

Questi risultati suggeriscono come la manipolazione del muscolo zigomatico influenzi la percezione delle espressioni facciali emotive, ma non la memoria a lungo termine. È possibile che questa manipolazione influenzi principalmente l'elaborazione immediata della valenza emotiva dei volti piuttosto che il loro riconoscimento a lungo termine.

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Action and Movement / 493

Motor Response Execution and Confidence: Understanding Decisional Dynamics

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Emerging evidence suggests that decision-making extends into motor response execution. In this study, we assessed the hypothesis that motor decisional components are related to decision confidence. In a visual lexical decision task, participants categorized strings of letters as words or non-words, and electromyographic (EMG) traces were used to partition reaction times (RTs) into pre-motor time (PMTs; from stimulus onset to EMG onset) and motor time (MTs; from EMG onset until the button-press). The stimuli varied in word frequency (high vs. low; e.g., house vs. whiff) and non-word type (pseudowords vs. 1-letter-different nonwords; e.g., flirp vs. tadle). After each response, participants rated their confidence on a 100-point scale (0 = sure error; 100 = sure correct). Results revealed that the word frequency effect (faster latencies for high- than for low-frequency words) was bounded to the PMT, with no difference in MT. In contrast, the lexicality effect (slower latencies for nonwords than for words) was evident in both PMT and MT. Notably, differences between low-frequency words and nonwords were observed in MT, but not in terms of decision confidence. Also, variations in confidence were detected between high- and low frequency words, but they were not reflected at the level of MT. Therefore, MT results cannot be entirely attributed to decisional confidence.

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No

Life cycle / 916

Cognitive, emotional-behavioral, and academic profiles of gifted youth in the digital age: toward a new digitised mind

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Introduction: Intellectual giftedness (IG) is defined by superior cognitive functioning. Despite cognitive strengths, gifted individuals often exhibit asynchronous development and emotional or learning difficulties. In the digital era –characterized by rapid information flow and increased cognitive load –the emergence of a “digitised mind” may alter neurocognitive trajectories. This study investigates cognitive, emotional, behavioral, and academic profiles in gifted youth within this evolving context. **Methods:** A total of 331 cognitively gifted children and adolescents (IQ >114), aged 2 to 16 years, underwent comprehensive cognitive, emotional-behavioral, and academic assessments between 2017 and 2024 at the Clinical Psychology Unit of the Fondazione IRCCS Policlinico Universitario Agostino Gemelli. Standardized instruments included the WPPSI-III, WISC-IV, MT-3 Clinical Battery, MT-3 Advanced Clinical Battery, BVSCO-2, AC-MT, and CBCL.

Results: Verbal Comprehension showed the highest mean score (VCI= 121), with lower values in Working Memory (106) and Processing Speed (109). Males outperformed females in Perceptual Reasoning (121 vs. 118, $p=0.032$), while females scored higher in Processing Speed ($p=0.021$). Writing (47.3%) and arithmetic (41.8%) were the most impaired academic domains. Poor reading comprehension was associated with lower Digit Span ($p=0.007$) and VCI ($p=0.001$), and low arithmetic scores correlated with reduced total IQ ($p=0.020$). Internalizing symptoms were most frequent and inversely related to Working memory ($r=-0.13$, $p=0.046$).

Conclusions: Cognitively gifted youth exhibit heterogeneous profiles, with high abilities alongside cognitive and emotional vulnerabilities. In the digital age, understanding the evolving digitised mind is essential for update assessments and targeted interventions.

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Sleep / Space, time, number / 561

Arousal and Time Perception: Unravelling the Effects of Negative Stimuli Through Pupillometry

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Emotional states can alter our perception of time. Although this is explained by an increase in arousal, the literature that controlled the arousal state physiologically is scarce. This study aims to investigate the complex relationship between emotion-induced physiological arousal and timing abilities. We examined whether variations in arousal levels in response to negative stimuli were associated with observable changes in pupil dilation. Additionally, we aimed to determine if these fluctuations could predict the extent of temporal distortion experienced during emotionally intense events. Forty participants (20 F; age 18-25) performed a time reproduction task; emotional stimuli were selected from the International Affective Picture System varying in perceived arousal levels (neutral, negative-high, negative-low). Participants' pupil dilation was tracked using an EyeLink 1000 Plus system. Data were analysed using generalized linear mixed models to assess the impact of negative stimuli on pupil dilation and temporal perception. The results revealed that greater pupil constriction was linked to the negativity of the stimuli, with more negative images causing larger pupil constriction. Regarding time perception, participants exhibited a greater overestimation of time for negative-high stimuli compared to neutral ones, and an underestimation for negative-low stimuli in comparison to neutral ones. In conclusion, these results underscore that physiological arousal induced by negative-high stimuli, reflected in a greater pupil constriction, significantly affects how we perceive time.

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Reasoning and abstract cognition / 638

Profiles of adolescent gamblers: Exploring the interplay of cognitive, personality, and emotional factors in problem gambling

Authors: Matteo Robba¹; Caterina Primi²; Elisa Borace²; Paola Iannello³; Angela Sorgente⁴; Maria Anna Donati²

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Gambling literature lacks person-centered studies examining the combined effect of different psychological characteristics in capturing adolescents vulnerable to problem gambling. This study investigated how cognitive factors, individual differences, and emotional distress interact to shape distinct psychological profiles among adolescent gamblers. The purpose was to identify which configurations of variables jointly increase the risk for problem gambling and which may serve as protective factors. A Latent Profile Analysis was conducted on Italian adolescents involved in gambling behaviors (N=541; Mage=16.67, SDage=1.27; 39% female). The analysis included cognitive variables (probabilistic reasoning, financial literacy, and gambling-related distortions), individual differences (self-control, sensation seeking, boredom proneness, financial behavior, and materialism), and emotional distress. ANOVAs and chi-square tests were subsequently performed to examine profile differences in problem gambling (frequency, severity, and craving). Three profiles emerged. Profile 1 (34.8%) showed high self-control, and low levels of all other variables. Profile 2 (25.9%) was characterized by high cognitive distortions, low self-control, and elevated levels of sensation seeking, boredom proneness, emotional distress, and materialism. Profile 3 (39.3%) had the best probabilistic reasoning skills, financial literacy above the mean, and average scores on remaining variables. While gambling frequency did not differ between profiles, Profile 2 reported greater gambling severity and craving. The risk for problem gambling appears highest when cognitive biases, maladaptive traits, and emotional distress co-occur. Two distinct protective profiles also emerged: one characterized by high self-control, and the other by high probabilistic reasoning financial literacy. These insights can inform the design of more nuanced and tailored interventions.

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BECOME: longitudinal impact of the COVID-19 pandemic on cognitive, emotional, and behavioral development in children and adolescents

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Introduction: The COVID-19 pandemic has raised critical concerns about its potential impact on children's cognitive, emotional, and behavioral development. The BECOME project (Behavioral, Emotional, and Cognitive Observations with Generator Real World Data) aimed to investigate developmental trajectories from childhood to adolescence using real-world psychometric data. The study primarily sought to identify developmental changes and potential early indicators of psychological

distress, particularly in relation to the COVID-19 period.

Methods: A retrospective observational study included 787 patients aged 6-18 years who underwent cognitive academic, and emotional-behavioral assessments between 2019 and 2023 at the Fondazione IRCCS Policlinico Universitario A. Gemelli. A total of 2661 evaluations were processed using the Generator Real World Data platform, enabling automated extraction and AI-driven semantic classification of psychometric data. Standardized tools were used at multiple time points, and patients were categorized according to the timing of evaluations relative to the pandemic (pre-, during-, and post-COVID).

Results: Statistically significant declines in Verbal Comprehension ($p = .002$) and Perceptual Reasoning ($p < .001$) were observed between pre- and post-COVID assessments, with the most pronounced deterioration in the Cross-COVID group. The Working Memory showed a moderate decrease, while Processing Speed remained stable across groups ($p = .88$). No persistent cognitive decline was observed beyond two years post-pandemic.

Conclusions: COVID-19 had a measurable short-term impact, with signs of recovery over time. AI-driven semantic profiling of big data enabled early detection of subtle cognitive changes. These results highlight the potential of real-world data and AI for early risk identification and personalized interventions.

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Action and Movement / 710

La lateralità manuale nei primati non umani: ricerche sui cebi dai cornetti in laboratorio e in natura

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Considerata la loro prossimità filogenetica con l'uomo, i primati non umani hanno suscitato un interesse particolare nella ricerca comparativa volta a individuare possibili precursori della specializzazione emisferica umana. Inoltre, la presenza di una mano prensile caratterizzata da sofisticate abilità manipolative ha reso queste specie un modello fondamentale per approfondire le origini e la natura della lateralità manuale tipica della nostra specie. Negli ultimi trent'anni, si è osservato un significativo incremento degli studi sui primati non umani, i quali hanno evidenziato l'influenza di diversi fattori sull'espressione della lateralità manuale in queste specie, con particolare attenzione all'importanza delle caratteristiche del compito svolto. Numerosi studi hanno esaminato le funzioni manuali dei cebi dai cornetti (*Sapajus* spp.), includendo aspetti relativi alla lateralità manuale. Si tratta di scimmie platirrine la cui linea evolutiva si è separata dalla linea evolutiva umana circa 40 milioni di anni fa e che sono note sia per l'elevata destrezza manuale sia per la marcata propensione alla manipolazione degli oggetti e dei substrati presenti nel loro ambiente. La maggior parte di questi studi è stata realizzata in laboratorio; tuttavia, negli ultimi dieci anni, sono state condotte ricerche anche in ambiente naturale. Il quadro generale dei risultati conferma che compiti di maggiore complessità motoria, quali le azioni che richiedono coordinazione bimanuale e movimenti fini delle dita, presentano una probabilità maggiore di indurre preferenze manuali non solo a livello individuale, ma anche a livello di popolazione. Ciò suggerisce che tali comportamenti abbiano potuto svolgere un ruolo determinante nell'evoluzione della lateralità manuale nei primati.

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Emotions and motivation 2 / 919

Neuromodulating Moral Emotions: Effects of tVNS and tDCS on Gastric and Cardiac Rhythm, Disgust, and Dishonest Behavior

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Disgust plays a critical role in shaping moral behavior, particularly in situations involving violations of social or bodily norms. While traditional cognitive-behavioral approaches often struggle to modulate maladaptive disgust responses, recent neuromodulation techniques offer promising alternatives. In a series of studies, we investigated whether transcutaneous vagus nerve stimulation (tVNS) and cathodic transcranial direct current stimulation (tDCS) over the left Insula could attenuate the emotional and behavioral consequences of disgust.

In two different experiments, 60 healthy participants completed two sessions, in which they received either active or sham tVNS (study 1) or tDCS (study 2) while listening to audio narratives designed to elicit neutral, physical disgust (PD), or moral disgust (MD). Gastric activity was continuously recorded using electrogastrography (EGG), while cardiac activity was recorded with electrocardiogram (ECG). After each induction, participants rated their emotional responses (disgust, shame, guilt, etc.) and completed a behavioral task measuring dishonest behavior (Temptation to Lie Card Game).

Our preliminary findings indicate that active tVNS significantly reduced gastric rhythm, and this reduction was associated with lower emotional arousal and reduced immoral behavior in both PD and MD conditions. These results suggest that modulating interoceptive signals via tVNS may reduce the affective impact of disgust and promote more honest behavior.

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Sleep / Space, time, number / 521

Sonno REM e procesamiento emotivo: un'indagine fisiologica e comportamentale

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Il sonno sembra favorire il processamento delle informazioni emotive, promuovendo il consolidamento della memoria e regolando la reattività agli stimoli emotivi. Tuttavia, i meccanismi attraverso cui i diversi stadi del sonno (NREM e REM) influenzano tali processi restano oggetto di dibattito. Nel presente studio abbiamo indagato il contributo del sonno REM al processamento emotivo durante un sonnellino pomeridiano.

Ottanta partecipanti sono stati suddivisi in due gruppi: Sonno (n = 40) e Veglia (n = 40). Il gruppo Sonno è stato ulteriormente suddiviso in base allo stadio di sonno raggiunto (NoREM, n = 20, REM, n = 20). Tutti i partecipanti hanno svolto un compito di riconoscimento mnestico e uno di reattività emotiva. Entrambi i compiti prevedevano la presentazione di immagini neutre e negative in tre momenti: prima (T0), dopo un periodo di sonno o veglia (T1) e 48 ore dopo (T2). Durante il compito di reattività sono state registrate frequenza cardiaca e conduttanza cutanea, e i partecipanti hanno valutato le immagini per valenza e arousal.

Il gruppo REM ha evidenziato un mantenimento della decelerazione cardiaca e una riduzione dell'arousal soggettivo in risposta a immagini negative, da T0 a T1, rispetto al gruppo NoREM. Non sono emerse differenze tra gruppi nella conduttanza cutanea. Il gruppo Sonno ha evidenziato un minor decadimento mnestico rispetto al gruppo Veglia, senza differenze tra REM e NoREM.

Il sonno REM sembra modulare la reattività emotiva, mentre un breve periodo di sonno favorisce il mantenimento della memoria emotiva, indipendentemente dallo stadio raggiunto.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Reasoning and abstract cognition / 646

Cognitive Biases in Human-AI Interaction: Psychological Implications for Explainable Artificial Intelligence

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As Artificial Intelligence (AI) becomes increasingly embedded in high-stakes domains such as health-care, law, and public administration, automation bias (AB) -the tendency to over-rely on automated recommendations- has emerged as a critical challenge in human-AI collaboration. While previous reviews have examined AB in traditional computer-assisted decision-making, research on its implications in modern AI-driven work environments remains limited. To address this gap, this research systematically investigates how AB manifests in these settings and the cognitive mechanisms that influence it.

Following PRISMA 2020 guidelines, we reviewed 17 peer-reviewed studies (2014–2024) from SCOPUS, ScienceDirect, PubMed, and Google Scholar. Specifically, while Explainable AI (XAI) and transparency mechanisms are designed to mitigate AB, evidence suggests they may inadvertently reinforce it by fostering misplaced trust, particularly among users with lower AI literacy. Additionally, individual differences such as professional expertise, cognitive engagement, and prior exposure to AI significantly shape susceptibility to AB.

Traditional perspectives attribute AB to over-trust in automation, assuming users perceive AI-generated outputs as inherently reliable. However, our critical review presents a more nuanced view. While confirming some prior findings, it also sheds light on new aspects, reframing AB as a bias shaped by both cognitive and attitudinal factors, as well as task characteristics. AI literacy, professional expertise, cognitive profile, trust dynamics, task verification demands, and explanation complexity all play a role.

Finally, we propose explanation design strategies that actively promote critical engagement and independent verification, offering both theoretical and practical contributions to bias-aware AI development.

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Emotions and motivation 2 / 606

Daily Worry and Physiological Reactivity to Psychosocial Stress: An Experimental and Ecological Assessment on Stress Anticipation

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Adjusting to minor psychosocial stressors, such as public speaking, is crucial for promoting health and well-being. However, not everyone manages this effectively, which can lead to chronic stress, illness, and affective psychopathology. According to the perseverative cognition hypothesis, repetitive negative thinking like worry and rumination prolongs stress-related affective and physiological activation, especially before and after a stressor, rather than during it, when such processes may even serve a protective function.

We tested this hypothesis through an experimental study combining real-life experience sampling with a lab-based public speech task. Participants completed three lab sessions at T1 (day 1), T2 (day 2), and T3 (day 3), each including a resting ECG recording. At T1, participants were informed they would face a moderate psychosocial stressor on T2. On T2, participants underwent the Trier Social Stress Test. For each session, affective state was measured using the State-Trait Anxiety Inventory. Daily worry was assessed via a smartphone app, distinguishing between situational worry related to the specific stressor (i.e., the upcoming lab task) and situational worry related to nonspecific worrisome content (i.e., general negative and repetitive thoughts).

Preliminary analyses (N = 15) support the hypothesized psychophysiological pattern: higher levels of stressor-related situational worry predicted elevated heart rate (HR) at T1 and T3, but not during the stressor at T2. In contrast, higher levels of nonspecific worry were associated with lower HR across sessions. Both worry types, however, were linked to increased subjective anxiety before the stressor.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Action and Movement / 899

Preparing to act follows Bayesian inference rules

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Introduction

Predictive brain theories suggest that the brain builds internal models to anticipate sensory inputs. Recent findings show that such models influence early sensory representations, shaping perceptual outcomes. Here, we hypothesized that this integration process extends along the cortical hierarchy,

reaching the motor system. Specifically, we propose that cortico-spinal excitability (CSE) is modulated in anticipation of actions consistent with prior expectations, reflecting preparatory activation of congruent motor representations.

Methods

Sixty-two participants performed a probabilistic discrimination task while receiving bilateral single-pulse TMS over the primary motor cortices (M1s). Motor-evoked potentials were recorded to assess CSE associated with prior-congruent versus incongruent actions, separately encoded by the two hands.

Results

Prior information modulated CSE before movement execution, primarily through suppression of M1 activity coding for prior-incongruent actions. This motor modulation reflected the behavioral bias introduced by prior cues, supporting a link between motor preparation and decision-making. Notably, we identified substantial interindividual variability in prior-driven CSE modulation, revealing two distinct predictive strategies: believers, who strongly relied on priors and showed selective CSE tuning, and empiricists, who downplayed priors and exhibited more balanced excitability. These differences were associated with individual cognitive traits: believers had higher schizotypal, whereas empiricists showed stronger autistic-like traits.

Discussion

Our findings demonstrate that predictive models shape not only perception but also action readiness, as reflected in CSE dynamics. Moreover, CSE modulation offers a physiological marker for individual differences in predictive processing, shaped by subclinical cognitive phenotypes. This work highlights the motor system as a key site for integrating expectations into decision behavior.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Sleep / Space, time, number / 579

Partial sleep deprivation effects on dual-task cognitive-motor performance

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While the impact of sleep quality on basic cognitive functions is well established, its effect on more complex daily activities - particularly those involving the simultaneous employment of cognitive and motor abilities (dual-tasking) - remains less understood. Interference arising from the concurrent performance of cognitive and motor tasks is commonly assessed through the dual-task effect (DTE), which compares the performance under single- and dual-task conditions. This study aims at investigating how sleep quality modulates cognitive-motor dual-tasking. In a within-subjects design, 48 participants with good sleep quality (Pittsburgh Sleep Quality Index ≤ 5) completed a cognitive-motor dual-task paradigm following two sleep conditions: normal sleep (NS; 12AM–9AM) and partial sleep deprivation (SD; 1AM–6AM). Sleep conditions were actigraphy-checked and administered in a counterbalanced order at least one week apart. After each condition, participants performed tasks assessing inhibitory control (Go/No-Go; GNG), sustained attention (Psychomotor Vigilance Task; PVT), and motor performances (Finger Tapping; FT) under single-task (ST) and dual-task (DT) modalities, with the latter combining FT with either PVT or GNG. Across both sleep conditions, the paradigm effectively elicited DTEs across cognitive domains. Notably, DT performance following

SD showed significantly longer reaction times in both inhibitory control and sustained attention tasks, compared to NS. These findings highlight the adverse impact of a partial sleep deprivation on cognitive-motor performance. Understanding dual-task performance effects in sleep-deprived conditions may inform interventions for sleep-disordered conditions and guide best practices for individuals whose lifestyles or professions involve occasional or chronic sleep restriction.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Life cycle / 552

The interplay of life satisfaction and cognitive reserve: implications for cognitive change in old age. A population-based study

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Scientific evidence suggest that higher levels of well-being are associated with slower cognitive decline during aging. We aimed to investigate the relationship between the Life Satisfaction Index (LSI) - one of the most frequently used measures of well-being - and cognitive decline, considering the role of cognitive reserve (CR) and sex differences. Longitudinal data from the Swedish National Study on Aging and Care in Kungsholmen (SNAC-K) were used. The population included 2618 cognitively healthy elderly participants older than 60, followed for up to 15 years. Trajectory of global cognitive decline was captured by changes in the Mini-Mental State Examination (MMSE). The relationship between LSI at baseline and MMSE change was assessed using linear mixed models, adjusted for, among others, personality, chronic disease burden, and depressive symptoms (all at baseline). Interplay of LSI with CR and sex was assessed in stratified analyses. Higher levels of LSI were associated with slower cognitive decline ($\beta_{\text{time}} = .33; p < 0.001$). *This association was independent of CR, being observed in participants with both low and high CR. In particular, LSI was associated with cognitive preservation only in women ($\beta_{\text{time}} = .30; p < 0.001$), and not in men ($\beta_{\text{time}} = .10; p = 0.17$).* Our study highlights the importance of psychological well-being in cognitive aging. Notably, because LSI contributes unique variance to cognition that is independent of cognitive reserve – a well-established correlate of cognitive phenotypes during aging – LSI could be considered a target for interventions to prevent cognitive decline, particularly among women.

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Reasoning and abstract cognition / 757

Framing the unthinkable: Individual differences in conspiracy beliefs around the Trump assassination attempt

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The 2024 U.S. presidential election campaign was marked by an assassination attempt on Donald Trump. The incident sparked intense public debate and gave rise to various alternative theories, including claims that the attack was staged by Trump himself or orchestrated by the Democratic Party.

Grounded in literature on individual differences linked to conspiratorial thinking, the present study examined how specific variables - i.e. Socio-Cognitive Polarization (SCP), problem-solving abilities, and general conspiratorial beliefs - may have influenced the adherence to different explanations of the event. Conducted in early 2025, our study compared responses collected before and after the assassination attempt to assess whether belief in pro- versus anti-Trump conspiracy theories shifted around his election.

116 participants (age: $M = 42.5$, $SD = 12.7$; sex: 57 females, 3 non-binary) were grouped into two clusters based on different levels of psychological flexibility. Those classified as more flexible demonstrated lower levels of SCP and conspiratorial ideation, and higher problem-solving skills, whereas the results were opposite for the less flexible group. Interestingly, even participants with greater psychological flexibility were more likely to endorse anti-Trump conspiracy theories in the aftermath of the election results.

These findings underscore the pervasive influence of conspiratorial ideation in shaping interpretations of socio-political events. They suggest that even individuals with greater cognitive resources and flexibility may be susceptible to biased reasoning. Results highlight the need to further explore how individuals make sense of complex events and underscore the necessity of interventions aimed at mitigating misinformation and its broader social impact.

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Emotions and motivation 2 / 649

From Faces to Feelings: The Role of Metacontrol in Empathic Accuracy within the Enfacement Illusion

Authors: Ilenia Lanni¹; Shuhui Lyu²; Xiaolei Xu²; Claudia Del Gatto³; Allegra Indraccolo³; Riccardo Brunetti³; Lorenza Colzato²; Bernhard Hommel²

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Introduction: Empathy, comprising both affective and cognitive components, crucially relies on empathic accuracy (EA)—the ability to correctly recognize others' emotions. Emotional contagion,

facilitated by facial mimicry, enhances EA by improving emotional understanding. The enfacement illusion, a visuo-tactile multisensory paradigm, has been shown to modulate self–other boundaries, amplifying mimicry and emotional contagion.

Since adaptive emotional processing also depends on metacognition—the dynamic balance between cognitive persistence and flexibility—this study investigated the interplay between emotional contagion, metacognition, and empathic accuracy. Metacognition was indexed via the EEG aperiodic exponent, where lower values reflect persistence and higher values indicate flexibility. Previous evidence links negative emotions to increased persistence and positive emotions to greater flexibility.

Method: Participants completed an emotion recognition task involving familiar and unfamiliar faces displaying happy, sad, or morphed expressions, following synchronous or asynchronous visuo-tactile multisensory interpersonal stimulation. Reaction times and EEG signals analyzed with FOOOF (Fitting Oscillations and One-Over-F) were recorded to assess the effects of emotional contagion and face familiarity on EA.

Results: Behavioral results showed that the synchronous enfacement illusion enhanced EA for happy expressions, particularly for familiar faces, as indicated by faster and more accurate responses. Further, a non-significant trend suggested faster recognition of unfamiliar sad faces.

Conclusion: The findings are discussed in light of EEG findings suggesting that EA (triggered by emotional contagion) might temporarily tip the metacognition balance toward flexibility, supporting dynamic and adaptive emotional responses.

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Life cycle / 564

Testare l'effetto di protocolli intensivi di neuro-empowerment da remoto sul benessere psicofisico nel ciclo di vita

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Il crescente sviluppo nel campo dell'e-health ha evidenziato nuove opportunità per la cura e l'intervento psicologico a distanza, in particolare attraverso tecnologie indossabili che possano favorire un senso di autoefficacia. Partendo da questa premessa, il presente studio ha avuto l'obiettivo di indagare il ruolo delle neurotecnologie di supporto all'interno di protocolli di neuroempowerment autogestiti lungo l'arco della vita. Novanta partecipanti (30 giovani adulti, età: 18-30; 30 adulti, età: 31-60; 30 anziani, età: 61-85) hanno preso parte a uno studio randomizzato e controllato, articolato in tre momenti di valutazione: pre-training, post-training e follow-up a un mese. La valutazione ha incluso test neuropsicologici, prove cognitive computerizzate e misure di forma fisica. Il gruppo sperimentale (EXP) ha seguito un protocollo di quattro settimane, con sessioni quotidiane di yoga e mindfulness supportate da un dispositivo di neurofeedback indossabile. Il gruppo di controllo (CON) ha svolto lo stesso protocollo, sostituendo però il supporto tecnologico con l'ascolto passivo di suoni naturali. L'analisi dei dati ha evidenziato un incremento generalizzato delle prestazioni nei test sulla flessibilità cognitiva e sull'attenzione focalizzata. Nel gruppo EXP, in particolare, sono stati osservati miglioramenti nella flessibilità lessicale, nella regolazione attentiva e nel controllo psicomotorio. Inoltre, i partecipanti del gruppo EXP hanno mostrato un significativo aumento dell'equilibrio. In linea con le ipotesi e con evidenze precedenti, i risultati sottolineano il ruolo delle pratiche di embodied awareness nel promuovere il benessere psicofisico lungo tutto l'arco della vita. Inoltre, emergono effetti specifici quando tali pratiche sono supportate da neurotecnologie indossabili autogestite.

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Action and Movement / 910

Investigating motor styles in the ACT2 kinematics framework

Author: Jordi Manuello¹

Co-authors: Camilla Maronati¹; Luigi F. Cuturi²; Tommaso Costa¹; Francesca Patarini³; Melissa Monti⁴; Sandro Rubichi⁵; Cristina Iani⁵; Jlenia Toppi³; Laura Astolfi³; Angela Ciaramidaro⁵; Andrea Cavallo¹

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In everyday life, we all experience that some people move in a similar way to each other, while others appear more dissimilar in their gestures. However, a comprehensive approach to quantify and manipulate the degree of “motor similarity” between individuals has still to be consolidated. To fill this gap, the ACT2 project built a wide upper-limb kinematics database of 90 healthy right-handed participants (M/F 41/49; 24.44±3.63 y), who performed movements falling into 6 classes: intransitive point-to-point and curvilinear movements, pointing, transitive reach to grasp towards objects with different size, different weight, or with different usage intention. High resolution kinematics data were collected through a motion-capture system consisting of 10 Vicon Vero cameras. This generated a dataset of 51478 movements. Based on this data, a Procrustes-based approach was used to measure motor distance between every couple of participants for each of the above mentioned 6 movement classes. The obtained distance matrices were compared through Mantel test. Results showed that the pattern of motor distance among participants is significantly stable within transitive movements (weight vs size: $r\text{-mantel}=0.50$; empirical- $p=0$; weight vs usage: $r\text{-mantel}=0.41$; empirical- $p=0$; size vs usage: $r\text{-mantel}=0.33$; empirical- $p=0.008$) and intransitive movements ($r\text{-mantel}=0.23$; empirical- $p=0.014$). However, hierarchical clustering applied to the distance matrices revealed that at least four variations of this general pattern emerge, therefore suggesting the existence of motor-subtypes accounting for subject-to-subject variability. Finally, decision trees identified reach to grasp movement towards objects of different weight as the most informative movement to differentiate subjects between motor sub-types.

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No

Sleep / Space, time, number / 741

A home-based paradigm of phase-targeted auditory stimulation during human sleep.

Author: Domenico Corigliano¹

Co-authors: Federico Salfi¹; Giulia Amicucci²; Samantha Mombelli³; John Axelsson⁴; Aurora D'Atri²; Michele Ferrara²

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Slow-wave oscillations (SOs) orchestrate memory-relevant communication between neocortex and hippocampus, yet field-ready tools for their manipulation remain scarce. We present a fully home-based protocol that couples a customised ZMax EEG headband with the real-time EventIDE algorithm to deliver phase-targeted auditory stimulation (PTAS). The system delivers 50-ms, 45-dB bursts of pink noise precisely at the 90° up-phase of the SO.

Two distinct data collections were performed. First, six healthy adults recorded 26 nights (184 h) of simultaneous ZMax EEG headband (Fpz-M1, AF8-M1) and polysomnography (PSG). Automatic staging with YASA on ZMax data matched manual PSG scoring with 84.3% accuracy (Cohen's Kappa=0.77), validating our custom montage.

A second investigation enrolled 26 participants, each completing one home night with PTAS and the same headband setup. EEG signals were processed in real-time by the EventIDE sine-fitting algorithm to detect the targeting phase. Auditory stimuli were delivered via loudspeakers specifically timed to coincide with this targeted SO phase throughout the night. Grand average ERPs revealed a sharp negative deflection ~500 ms after stimulation, and subsequent positive peaks after ~1000 ms, indicating robust cortical activation. Time frequency analysis showed increases ($p < 0.01$) in delta (0.5-4 Hz) and theta (4-8 Hz) power 250-550 ms post stimulus, alongside enhanced spindle activity (11-16 Hz) between 700 and 1500 ms, relative to sham.

Our results demonstrate the capacity of the modified-home-based ZMax and EventIDE system to accurately detect and modulate SO dynamics using precisely timed auditory stimuli. Collectively our results validate a fully home-deployable platform for modulating human sleep dynamics, paving the way for large-scale real-world applications.

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Reasoning and abstract cognition / 923

Pensare per contrari facilita il processo di generazione e di verifica delle ipotesi nel compito di scoperta della regola di Wason

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All'interno del filone di ricerca che indaga il ruolo del "pensare per contrari" in vari processi di ragionamento (per una rassegna vedi Branchini et al., 2021), lo studio presentato analizza se i contrari aiutino nella generazione e verifica di ipotesi nel compito 2-4-6 di Wason (1960), che ha generalmente un basso indice di successo (meno del 40%).

180 partecipanti sono stati distribuiti in tre condizioni: nella condizione training basato sui contrari (TC) veniva loro chiesto di individuare una a alla volta le proprietà della tripletta iniziale (2-4-6), di identificare il rispettivo contrario, e di focalizzarsi su quest'ultimo nella produzione delle triplette test; nella condizione training basato sull'elenco delle proprietà (TP) l'indicazione iniziale era identica (individuare una a alla volta le proprietà della tripletta iniziale) e venivano invitati a focalizzarsi sul tali proprietà nella produzione delle triplette test; nella condizione di controllo (C), non veniva data alcuna indicazione.

Dai risultati è emerso che il pensiero per contrari ha favorito la soluzione del problema (TC=78%),

non solo rispetto alla condizione di controllo (C=36%), ma anche al training alternativo (TP=38%), il che indica che non è la sollecitazione ad analizzare singolarmente le proprietà, ma sono i contrari ad aver favorito la soluzione. Nella condizione TC è emersa una minor reiterazione della verifica della stessa ipotesi e una più frequente individuazione della dimensione critica (crescente-decrescente). Tali risultati vengono discussi in relazione a precedenti contributi sul ruolo del contrasto nell'hypothesis testing (Gale & Ball, 2012; Oaksford & Chater, 1994; Rossi et al., 2001).

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Action and Movement / 971

Revealing Oculomotor Tension Between Inhibition and Capture During Free Viewing

Author: Antimo Buonocore¹

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Exploring a visual scene is a fundamental human behavior that supports understanding and navigation. During this process, unexpected events may appear in the visual periphery, requiring rapid, coordinated responses. To support this, the visual and oculomotor systems operate in a continuous loop of perception and action —yet before attention and gaze can shift toward new stimuli, this loop is often momentarily interrupted. A central question is whether interruption or reorientation more readily gains control of the system. We tested this in two free-viewing experiments. In Experiment 1, participants searched for a small, low-salience purple dot within natural scenes. During the search, a sudden-onset black dot appeared randomly to the left or right of gaze. This transient reliably induced saccadic inhibition —indicating interruption—beginning approximately 100 ms after onset. Notably, saccades were biased toward the transient —indicating reorientation—during and shortly after the inhibition window, with a slight delay. In Experiment 2, the transient appeared along the vertical meridian, either above or below fixation. Again, we observed robust saccadic inhibition at ~100 ms post-onset, accompanied by a directional bias in saccades. Interestingly, transients above fixation elicited stronger capture effects than those below, aligning with known asymmetries in visuo-motor sensitivity. These findings support the idea that interruption precedes reorientation: early sensory signals can transiently override and pause ongoing motor plans. We propose that subcortical or premotor oculomotor structures briefly dominate the competition between endogenous and exogenous control, biasing the system toward salient input even before full attentional shifts are complete.

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No

Emotions and motivation 2 / 859

Interoceptive-Based Interventions for Eating Disorders

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The ability to perceive, interpret, and regulate internal bodily signals - known as interoception - is fundamental to emotional regulation, decision-making, and well-being. Altered interoception has been increasingly recognized as a central feature of eating disorders (EDs) such as anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder (BED).

Training methods designed to enhance interoceptive abilities –interoceptive-based interventions (IBIs) –have shown promise in treating conditions like anxiety disorders, yet their application to eating disorders remains limited.

This mini-talk will present findings from a systematic review investigating the use of IBIs (including mindfulness-based interventions, interoceptive exposure, and biofeedback) for eating disorders. Mindfulness-based interventions were the most investigated, showing consistent improvements in emotional regulation, body awareness, and eating-related behaviors. Interoceptive exposure showed promising results in reducing avoidance of bodily sensations, particularly in AN and BED, while biofeedback interventions revealed potential for enhancing emotional regulation through real-time physiological awareness. However, methodological limitations across studies, such as small sample sizes and the absence of standardized outcome measures of interoception, prevent firm conclusions on their efficacy.

I will conclude that while IBIs hold promise for addressing interoceptive dysfunctions in eating disorders, future research needs to refine intervention protocols, enhance ecological validity, and employ more rigorous designs to fully realize their clinical impact.

If you're submitting a symposium talk, what's the symposium title?:

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Sleep / Space, time, number / 867

EARLY THETA ACTIVITY PRECEDING CORTICAL DOWN-STATES IS A CRUCIAL MODULATOR OF SLOW OSCILLATORY-SPINDLE DYNAMICS IN HUMAN NON-REM SLEEP

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Introduction: The sequence of cortical down-states, up-states, and spindle events provides a core electrophysiological basis for memory consolidation during non-REM sleep. However, the mechanisms orchestrating this coordination remain elusive. Here, we applied phase-targeted auditory stimulation (PTAS) at slow oscillation (SO) phases of maximal excitability or inhibition to identify spectral signatures underlying slow wave generation and coordination with spindles. We also compared stimulus-evoked slow waves, spontaneous SOs, and K-complexes to determine a shared spectral fingerprint supporting spindle synchronization.

Methods: Twenty-six participants (23.23±2.61 years, 17 females) slept at home wearing an EEG headband (Fpz-M1, AF8-M1) coupled with an algorithm delivering 50-msec pink noises (45 dB) during SO up- and down-states. EEG responses were analyzed through event-related potentials (ERPs) and event-related spectral perturbations. Furthermore, slow waves were detected *post hoc* throughout the night and categorized as stimulus-evoked, spontaneous SOs (N3), or K-complexes (N2).

Results: PTAS-up elicited larger negative and positive peaks at ~500 and ~1000 msec, greater pre-down-state theta activity (5-8 Hz), and stronger up-state-coupled spindle power (12-16 Hz) than PTAS-down (all $p < 0.001$). Theta response robustly predicted ERP amplitude and spindle power (both $r = 0.70$).

Stimulus-evoked events and K-complexes shared overlapping spectral profiles with higher pre-down-state theta and up-state-coupled spindle activity than spontaneous SOs (all $p < 0.001$). Early theta strongly predicted spindle activity across all categories ($r = 0.78$), accounting for 97.54% of the spindle difference between K-complexes and SOs.

Conclusions: These findings highlight theta activity as a previously unrecognized mechanism linking cortical down-states to spindle dynamics, redefining the electrophysiological landscape of non-REM mechanisms supporting memory consolidation.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Life cycle / 645

Rethinking Cognitive Reserve in fMRI research: a Meta-analytic investigation on the neural consistency of Proxy measures

Author: Annachiara Crocetta¹

Co-authors: Donato Liloia¹; Franco Cauda¹; Jordi Manuello²; Sergio Duca³; Tommaso Costa¹

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Introduction: Cognitive reserve (CR) refers to the capacity of the brain to sustain cognitive performance despite age-related changes or pathophysiological conditions. Human brain mapping techniques, particularly task-based functional magnetic resonance imaging (tb-fMRI), have been instrumental in exploring its underlying neural correlates. CR is traditionally assessed through socio-behavioral proxies such as education, intelligence quotient, or composite indices, with considerable variability in their definitions and applications, which challenges their validity and consistency across studies. This study systematically explores the heterogeneity of brain activation patterns associated with CR proxies in healthy adults. **Methods:** A literature search identified 12 eligible tb-fMRI experiments, encompassing 802 healthy adult participants, that reported whole-brain CR-related activation. A coordinate-based meta-analysis using Permutation of Subject Images-Signed Differential Mapping (PSI-SDM) was conducted to assess consistent activation patterns across experiments. To further explore potential subgroupings or hidden similarities among experiments, hierarchical clustering and one-class support vector machine (SVM) analyses were applied. **Results:** The PSI-SDM meta-analysis did not yield any significant clusters of activation, and multivariate models revealed high dissimilarity across activation patterns, with over 30% of experiments classified as outliers. A qualitative synthesis of individual experiments further highlighted a lack of topographical consistency, with both CR-related increases and decreases in task-related activation observed across widespread cortical and subcortical regions. **Conclusion:** These findings indicate that current proxy-based approaches may struggle to capture the complex nature of CR. Advancing the study of CR will require a multifaceted approach, a focus on network-level brain function, and deeper investigations into the neural mechanisms of cognitive compensation.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Reasoning and abstract cognition / 746**Fiducia nell'IA generativa: l'influenza della lunghezza e dell'accuratezza delle risposte****Authors:** Fabio Ferlazzo¹; Nicolò Ciarrocchi^{None}; Pierpaolo Zivi¹; Stefano Sdoia²¹ *Sapienza, Università di Roma*² *Dipartimento di psicologia***Corresponding Author:** nicolociarrocchi@uniroma1.it

I Large Language Models sono spesso impiegati come strumenti di supporto al processo decisionale anche se possono mostrare pregiudizi decisionali simili a quelli degli esseri umani. Visto che le persone tendono ad avere un pregiudizio positivo nei confronti delle nuove tecnologie, è fondamentale esaminare i fattori che influenzano i giudizi di fiducia delle persone nei confronti dell'intelligenza artificiale generativa (IA). Questo studio ha analizzato se gli individui utilizzano la correttezza o la lunghezza delle risposte come indicatore dell'affidabilità delle risposte stesse. La manipolazione della lunghezza è dovuta al fatto che essa viene spesso associata ad un ragionamento di natura più o meno articolata. Abbiamo presentato scenari decisionali tratti dai programmi di ricerca sulle euristiche e i pregiudizi e il test di riflessione cognitiva (CRT) abbinato a una risposta. Inoltre, abbiamo valutato la fiducia degli individui nell'IA attraverso la scala Trust in Automation. La lunghezza e la correttezza delle risposte sono state manipolate in modo che fossero o lunghe (o concise) e corrette (intenzionali) o errate (intuitive). Dai risultati ottenuti, i partecipanti hanno valutato le risposte lunghe come più affidabili di quelle concise e le risposte corrette come più affidabili di quelle errate ma solo per gli item CRT.

La fiducia nell'IA ha mostrato effetti di interazione con la tipologia di scenario e la lunghezza delle risposte. Questi risultati suggeriscono una complessa interazione tra caratteristiche delle risposte nell'influenzare la percezione di affidabilità degli utenti.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:**

No

Semantic Memory: A Multidimensional System Under Control / 817**Semantic Memory: A Multidimensional System Under Control****Author:** Eleonora Catricalà¹**Co-authors:** Anna M Borghi²; Luca Rinaldi³; Maria Montefinese⁴¹ *IUSS Pavia*² *Università la Sapienza*³ *UNIPV*⁴ *Università di Padova***Corresponding Author:** eleonora.catricala@iusspavia.it

The symposium explores the structure of semantic memory through the lens of multidimensionality, multimodality, and control, integrating theoretical perspectives with empirical evidence.

The first talk investigates how semantic memory is shaped by cumulative linguistic, visual, and auditory experiences. Using distributional semantic models and EEG data, it reveals that modality-specific and modality-independent priors guide memory formation, with different modalities dominating depending on the nature of the task (words, images, sounds).

The second contribution extends the embodied cognition framework to abstract concepts, showing that these are grounded across multiple experiential dimensions, each linked to partially distinct neural systems. While most abstract concepts emerge from a convergence of dimensions, some rely more heavily on particular types of dimensions. Evidence from behavioral and neurostimulation studies in both healthy individuals and patients highlights distinct categories of abstract knowledge (e.g. emotion, space, time, quantity).

The third talk focuses on the social dimension of abstract concepts. It proposes that these concepts often evoke uncertainty and a need for social interaction to construct meaning. Interactive tasks, rich in multimodal cues, are highlighted as essential tools to capture the nuanced ways in which different types of abstract concepts are processed.

The final talk examines the relationship between semantic control and executive functions across development. Results from behavioral tasks and structural equation modeling suggest these systems are partially distinct yet strongly interconnected, emphasizing both their unity and diversity.

Together, these contributions offer an updated, comprehensive and nuanced account of how semantic memory operates across experience, modalities, and cognitive control mechanisms.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione / 702

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione

Authors: Sabrina Fagioli¹; Davide Nardo²; Stefano Mastandrea³

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³ *Università Roma Tre*

Corresponding Author: sabrina.fagioli@uniroma3.it

La relazione tra attenzione ed emozioni è un elemento centrale nello studio dei bias attentivi, ossia la tendenza del sistema attentivo a privilegiare l'elaborazione di stimoli con valenza emotiva negativa, come volti arrabbiati o parole con contenuto minaccioso. Questo fenomeno è particolarmente rilevante in condizioni cliniche come l'ansia e la depressione, in cui si osserva una compromissione delle componenti di orientamento dell'attenzione nei confronti degli stimoli negativi. In particolare, nei soggetti ansiosi si evidenzia un rapido orientamento dell'attenzione verso segnali minacciosi (engagement), mentre nei soggetti depressi si riscontra una difficoltà a distogliere l'attenzione da stimoli negativi (disengagement), contribuendo così al mantenimento di schemi cognitivi disfunzionali e della sintomatologia affettiva.

Comprendere come questa interazione contribuisca alla genesi e al mantenimento dei bias cognitivi è fondamentale per lo sviluppo di strategie di riabilitazione cognitiva efficaci, mirate alla riduzione di queste distorsioni e al miglioramento del benessere psicologico.

L'obiettivo del simposio è analizzare, secondo una prospettiva teorica ed empirica, le modalità con cui le emozioni modulano i meccanismi di allocazione spaziale dell'attenzione, della percezione e della memoria. Verranno discussi i correlati comportamentali e neurofisiologici dei bias cognitivi, attraverso l'uso di paradigmi sperimentali e tecniche di neuroimaging. Particolare enfasi sarà rivolta alle implicazioni per lo sviluppo di protocolli riabilitativi e approcci terapeutici innovativi destinati alla prevenzione e al trattamento dell'ansia e della depressione.

If you're submitting a symposium talk, what's the symposium title?:

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicometria per la salute e la sostenibilità / 938**PSICOMETRIA PER LA SALUTE E LA SOSTENIBILITA'****Author:** Rosalba Rosato^{None}**Corresponding Author:** rosalba.rosato@unito.it

L'Agenda 2030 per lo Sviluppo Sostenibile pone al centro la salute, il benessere e la promozione di comportamenti responsabili come elementi chiave per costruire società più eque e resilienti. In questo contesto, la capacità di valutare costrutti psicologici quali la qualità della vita, il rischio di comportamenti problematici o l'accettabilità di innovazioni sostenibili è cruciale per orientare interventi efficaci e politiche informate.

Un approccio psicometrico solido e affidabile consente di misurare con rigore aspetti complessi della salute, del benessere e delle scelte individuali e collettive, con applicazioni che spaziano dalla clinica alla ricerca applicata. Tali strumenti trovano impiego nella salute mentale, nella salute pubblica, nell'adattamento alle malattie croniche e nella comprensione dei comportamenti di consumo.

Oggi, la psicometria si confronta con nuove sfide e opportunità: l'integrazione con modelli linguistici avanzati e dati digitali apre scenari promettenti per l'analisi predittiva e l'identificazione precoce di bisogni e vulnerabilità. Allo stesso tempo, la diffusione di strumenti standardizzati, culturalmente sensibili e scientificamente fondati è essenziale per garantire misurazioni e interventi equi ed efficaci.

I contributi raccolti in questo simposio mettono in luce la versatilità della psicometria, il suo potenziale nel promuovere una visione integrata della salute e della sostenibilità, e il ruolo dell'assessment psicologico nella promozione del benessere e di comportamenti sostenibili.

If you're submitting a symposium talk, what's the symposium title?:

PSICOMETRIA PER LA SALUTE E LA SOSTENIBILITA'

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology / 799**Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology****Author:** Luca Tarasi¹¹ University of Bologna**Corresponding Author:** luca.tarasi2@unibo.it

The combination of Noninvasive Brain Stimulation (NIBS) and electroencephalography (EEG) provides a powerful and precise method to explore the dynamic neural processes underpinning human cognition. Here, we emphasize transcranial magnetic stimulation (TMS) as a leading NIBS modality integrated with EEG to offer direct causal insights into how cognitive functions emerge and evolve over time. Organized by early-career researchers, this symposium junior will highlight recent methodological innovations and compelling empirical findings achieved through advanced TMS-EEG techniques.

Speakers will showcase the versatility and precision of TMS-EEG across cognitive domains—including time perception, decision-making, learning, hemispheric specialization, and action observation—and will discuss a suite of tailored stimulation protocols (paired-pulse TMS, cortico-cortical paired associative stimulation, continuous theta-burst stimulation, rhythmic TMS). Each protocol will be highlighted for its ability to selectively modulate neural excitability, drive neuroplasticity, or entrain oscillatory activity within targeted frequency bands.

The integration of simultaneous EEG recordings with targeted brain stimulation further enables unprecedented opportunities for exploring neural excitability, oscillatory dynamics, functional connectivity, and causal interactions among brain regions with exceptional temporal resolution. These advanced methodological frameworks are critical for dissecting complex cognitive phenomena into precise neural mechanisms, facilitating detailed and mechanistic interpretations.

Designed specifically for researchers working at the crossroads of brain stimulation, electrophysiology, and experimental neuroscience, the symposium will present robust theoretical frameworks, innovative methods, and practical insights. The event aims to foster a dynamic, collaborative environment, stimulating discussion and inspiring future research directions in this rapidly evolving and exciting scientific field.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche / 1011

Introduzione

Corresponding Authors: andrea.ciricugno@unipv.it, maria.arioli@unibg.it

Psicometria per la salute e la sostenibilità / 869

Towards an Integrated Assessment of ADHD and ASD Traits in the General Population: Psychometric Applications and Clinical Implications

Authors: Ilenia Le Donne¹; Ilenia Del Signore¹; Monica Mazza¹

¹ *Dipartimento Scienze Cliniche Applicate e Biotecnologiche, Università degli Studi Dell'Aquila*

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INTRODUCTION: Differential diagnosis in adulthood requires tools that can capture the complexity and overlap between disorders, such as Attention Deficit/Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD). In this regard, the present study aims to explore the structure of the Conners' Adult ADHD Rating Scales (CAARS) and its relationship with the Social Responsiveness Scale-2 (SRS-2), promoting an integrated approach to psychometric measures.

METHOD: A sample of 363 adults (mean age= 22.61; SD= 7.46) completed the CAARS and SRS-2. An Exploratory Graph Analysis (EGA) was conducted to define the dimensional structure of the CAARS. Next, predictive models were developed to analyze the extent to which identified ADHD traits may anticipate changes in levels of social impairment.

RESULTS: The EGA revealed a multidimensional structure with good reliability indices [93%; 95% CI (6.41 - 7.58)]. Furthermore, preliminary results show significant associations between ADHD dimensions and SRS-2 scores. Predictive patterns suggest the presence of transdiagnostic patterns that can delineate symptom profiles.

CONCLUSIONS: Preliminary data support the psychometric validity of the CAARS and highlight the potential integration between different measures for more sensitive assessment in adulthood, as well as the importance of considering dimensional and transdiagnostic approaches.

If you're submitting a symposium talk, what's the symposium title?:

PSICOMETRIA PER LA SALUTE E LA SOSTENIBILITÀ

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche / 508

COMPRENDERE LA MENTE DEGLI ALTRI: EVIDENZE COMPORTAMENTALI, CLINICHE E NEUROSCIENTIFICHE

Authors: Maria Arioli¹; Andrea Ciricugno²

¹ *Università degli studi di Bergamo*

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La rilevanza clinica e scientifica della cognizione sociale è stata chiaramente evidenziata nell'ultima edizione del Manuale Diagnostico e Statistico dei Disturbi Mentali (DSM-5), pubblicato nel 2013, in cui la cognizione sociale è stata riconosciuta come uno dei sei componenti fondamentali del funzionamento neuro-cognitivo. Questo simposio si propone di presentare recenti e significativi contributi volti a potenziare e approfondire la nostra comprensione della cognizione sociale. In particolare, i lavori selezionati si focalizzeranno sull'analisi dei processi cognitivi e delle basi neurali che ci permettono di interpretare gli stati mentali e le emozioni altrui, facilitando risposte efficaci in contesti sociali sempre più complessi e dinamici.

I contributi offriranno una panoramica delle basi cognitive e neurali a sostegno di questi processi di cognizione sociale, presentando evidenze emerse da una vasta gamma di approcci metodologici, che spaziano dall'analisi dei dati di neuroimmagine e delle risposte elettrofisiologiche, a tecniche di stimolazione cerebrale non invasiva, fino a metodologie ecologiche che integrano l'uso della realtà virtuale. Inoltre, il simposio includerà anche un approfondimento su cosa accade quando queste capacità di comprensione e interazione sociale sono compromesse, considerando diverse condizioni cliniche. Specificatamente, verrà esplorato come danni cerebrali, anomalie genetiche o disturbi del neurosviluppo possano compromettere tali capacità fondamentali, e verranno presentati e discussi i loro risvolti comportamentali e neurali, con l'obiettivo di favorire non solo un avanzamento della conoscenza scientifica, ma anche di offrire prospettive cliniche utili per interventi riabilitativi.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione / 652**Il costo cognitivo della ruminazione: interferenza tra elaborazione emotiva e compiti esecutivi****Author:** Antonietta Curci¹**Co-authors:** Fabiana Battista²; Tiziana Lanciano¹¹ *Università degli Studi di Bari Aldo Moro*² *Università degli studi di Bari Aldo Moro***Corresponding Author:** antonietta.curci@uniba.it

Il presente lavoro indaga come le funzioni esecutive (FE) concorrano all'elaborazione di un'esperienza emotiva in competizione con compiti concorrenti, con conseguenze sia a breve termine (difficoltà nell'esecuzione del compito) che a lungo termine (prolungamento dell'elaborazione emotiva in termini di ruminazione). Si ipotizza che tali conseguenze siano influenzate dalla componente esecutiva coinvolta (shifting - Studio 1; updating - Studio 2).

I partecipanti (N Studio 1 = 48; N Studio 2 = 42) sono stati esposti a stimoli emotivamente negativi vs. neutri prima e dopo l'esecuzione di compiti visuo-spaziali che richiedevano il coinvolgimento di specifiche componenti esecutive. La ruminazione è stata misurata sia immediatamente dopo i compiti, sia a distanza di 24 ore.

I risultati dello Studio 1 indicano che l'esposizione a contenuti negativi incide sulla performance nei compiti di shifting, rispetto a contenuti neutri; nello Studio 2 (updating), invece, non sono emerse differenze significative tra condizioni. Inoltre, la ruminazione è risultata più intensa e duratura nei partecipanti coinvolti nel compito di shifting, ma non in quelli impegnati nel compito di updating. Questi risultati suggeriscono che, quando l'elaborazione emotiva di esperienze negative e le richieste cognitive competono per le stesse risorse esecutive, la difficoltà nello spostamento flessibile dell'attenzione può favorire la persistenza di modalità di pensiero rigide e disfunzionali (ruminazione). Ciò è particolarmente rilevante per comprendere difficoltà e bias attentivi osservati nei disturbi affettivi, come ansia e depressione.

If you're submitting a symposium talk, what's the symposium title?:

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Semantic Memory: A Multidimensional System Under Control / 1034**Introduction**

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche / 713

The role of the cerebellum in mentalizing: a transcranial magnetic stimulation investigation**Author:** Sonia Paternò¹**Co-authors:** Andrea Ciricugno²; Zaira Cattaneo³; Chiara Ferrari⁴¹ *Università degli Studi di Pavia*

² *IRCCS C. Mondino Foundation*³ *Università degli studi di Bergamo*⁴ *Università di Pavia***Corresponding Author:** sonia.paterno01@universitadipavia.it

The cerebellum was known to have a role in motor coordination and planning; however, recent studies demonstrated that the posterior sectors of the cerebellum are also involved in cognition and social cognition. Several neuroimaging studies pointed specifically to the cerebellar hemispheres in supporting higher-order social processes. In the present study, we used transcranial magnetic stimulation (TMS) to shed further light on the cerebellum's contribution to social cognition by targeting the right and left cerebellar hemispheres during a mentalizing task. Participants were asked to perform a classical mentalizing task (The Yoni task) and a control task while TMS was applied over the right cerebellar hemisphere, the left cerebellar hemisphere, and the vertex (control condition). Our results confirm the cerebellum's role in mentalizing, possibly suggesting a stronger contribution of the right (vs. left) cerebellar hemisphere. Our findings point to the right lateralization of the cerebellum in mentalizing processes and offer new insights into functional brain asymmetry.

Keywords: cerebellum; mentalizing; transcranial magnetic stimulation; social cognition**If you're submitting a symposium talk, what's the symposium title?:**

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Semantic Memory: A Multidimensional System Under Control / 802**Multimodal priors reveal the structure of semantic memory****Author:** Luca Rinaldi¹¹ *Università di Pavia***Corresponding Author:** luca.rinaldi@unipv.it

A central question in cognitive science is how prior knowledge—shaped by experience across modalities—guides the formation and organization of semantic memory. In this talk, I will explore how semantic memory emerges from cumulative linguistic, visual, and auditory experiences. Drawing on distributional semantic models, I will show how structured patterns reflect deeply rooted modality-specific and modality-independent priors. For instance, linguistic priors play a dominant role in word-based tasks, while visual and auditory priors exert stronger effects in image-based and sound-based tasks, respectively. I will also present EEG evidence revealing how the brain dynamically integrates multimodal priors during memory encoding and retrieval. Together, these findings offer a richer understanding of how semantic memory is shaped by multisensory experience.

If you're submitting a symposium talk, what's the symposium title?:

Semantic Memory: A Multidimensional System Under Control

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Psicometria per la salute e la sostenibilità / 945**Assessing construct validity and reliability of the Benefit Finding Scale in people with multiple sclerosis and their caregivers**

Authors: Andrea Giordano¹; Rosalba Rosato²; Beatrice Biolzi³; Clara Chisari⁴; Monica Falautano⁵; Monica Grobberio⁶; Claudia Niccolai⁷; Erika Pietrolongo⁸; Maria Esmeralda Quartuccio⁹; Rosa Gemma Viterbo¹⁰; Antonella Delle Fave¹¹; Marta Bassi¹²

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BACKGROUND. The Benefit Finding Scale (BFS) is a 17-item measure assessing the perception of positive contributions to one's life deriving from stressful and life-threatening experiences. We aimed to investigate construct validity (structural validity, measurement invariance between sub-samples) and reliability (internal consistency) of the BFS in people with multiple sclerosis (PwMS) and their caregivers.

METHODS. We used confirmatory factor analysis (CFA) to assess structural validity in terms of the recently proposed three-factor structure of the BFS. We then used multi-group CFA to assess measurement invariance between PwMS and their caregivers. To appraise internal consistency, we calculated Cronbach's alpha.

RESULTS.

A total of 1360 PwMS and their caregivers completed the study. The three-factor structure of the BFS showed good fit (RMSEA 0.06; CFI 0.92; SRMR 0.05). Configural, metric and scalar invariance were confirmed. The BFS showed good internal consistency for 'Acceptance and adjustment' (alpha 0.80), questionable for 'Family relations and sense connectedness' (alpha 0.66) and 'Personal growth and authenticity' (alpha 0.63).

CONCLUSIONS. Results support using the BFS as a three-factor measure of benefit finding among PwMS and their caregivers. Measurement invariance of the BFS was confirmed between PwMS and their caregivers, suggesting that the questionnaire has the same meaning and measurement parameters in PwMS and their caregivers. It is also possible to calculate separate scores for each BFS domain to obtain fine-grained information on benefit finding in multiple sclerosis.

If you're submitting a symposium talk, what's the symposium title?:

PSICOMETRIA PER LA SALUTE E LA SOSTENIBILITA'

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione / 896

Correlati neurali e comportamentali dell'orientamento spaziale dell'attenzione in individui con sintomatologia ansioso-depressiva subclinica

Author: Sabrina Fagioli¹

Co-authors: Ilenia Salsano²; Giovanni Calcagnini³; Ernst Koster⁴; Julian Thayer⁵; Emiliano Macaluso⁶; Cristina Ottaviani⁷

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² *Boys Town Omaha, United States*

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I disturbi affettivi sono associati ad alterazioni nel controllo dell'orientamento spaziale dell'attenzione (attentional bias, AB). In particolare, i soggetti con sintomi ansiosi tendono a mostrare ipervigilanza verso stimoli negativi, mentre quelli con sintomi depressivi tendono a mantenere l'attenzione focalizzata più a lungo su tali stimoli. In questo studio abbiamo utilizzato la versione emozionale del classico dot-probe task durante l'acquisizione di immagini di risonanza magnetica funzionale (fMRI), con l'obiettivo di indagare i correlati neurali e comportamentali dei bias attentivi in 41 partecipanti con sintomatologia ansiosa e depressiva subclinica. In particolare, abbiamo esaminato se l'AB associato ad ansia e depressione si manifesti preferenzialmente nelle fasi precoci (engagement) o tardive (disengagement) dell'elaborazione attentiva. Inoltre, abbiamo valutato l'influenza del funzionamento autonomo, misurato tramite la variabilità della frequenza cardiaca (heart rate variability, HRV), su tali componenti dell'attenzione.

I risultati comportamentali indicano che i soggetti con sintomatologia affettiva presentano un'alterazione di entrambe le componenti attentive, indipendentemente dalla valenza emotiva degli stimoli. A livello neurale, il disengagement da stimoli negativi è risultato associato a un aumento dell'attività in regioni coinvolte nel controllo dell'orientamento spaziale dell'attenzione, in particolare nel lobulo parietale superiore destro. Tale attivazione risulta inoltre modulata da indici di regolazione autonoma.

Questi risultati suggeriscono che il deficit di controllo attentivo caratterizza le forme subcliniche di sintomatologia affettiva e coinvolge fasi specifiche dell'orientamento spaziale dell'attenzione (engagement e disengagement), rappresentando un potenziale marker per l'identificazione precoce e un target mirato per interventi di riabilitazione cognitiva.

If you're submitting a symposium talk, what's the symposium title?:

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione

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No

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche / 518

The neurostructural bases of empathy: morphometric evidence for a multicomponential approach

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The neural bases of individual differences in empathy subcomponents are still debated. We employed brain morphometry to investigate the neurostructural bases of individual and sex differences in specific empathy facets in 124 healthy individuals who completed the Balanced-Emotional-Empathy-Scale (BEES), and both the emotional/cognitive and self/other-oriented empathy subscales of the Interpersonal-Reactivity-Index (IRI). Univariate and multivariate morphometric analyses highlighted, respectively, voxels/clusters and whole structural networks where grey-matter volume reflected specific empathy subscores. Such morphometric properties were significantly related to individual differences in emotional empathy, while no evidence was found for structural networks underlying cognitive empathy. Personal distress correlated with grey-matter volume in the right insula and amygdala, likely mediating an affective sharing self-perceived as disturbing. Instead, empathic concern was associated with the medial precuneus and sensorimotor/inferior parietal cortex, possibly enabling empathic comprehension and prosocial behaviour mediated by attentional shift towards others. Female participants displayed larger grey-matter volume than male ones, related to higher emotional empathy, in limbic structures including amygdala and insula. These results ground multicomponential empathy models in specific neurostructural networks, representing a reference for future studies of empathic processing in health and disease.

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No

Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology / 667

Linking Corticospinal Excitability and EEG Motor Rhythms During Action Observation: Insights from an EEG-TMS Study

Author: Maria Chiara Bazzini¹**Co-authors:** Rita Rossi ¹; Antonella Mancuso ²; Laura Ferrari ³; Arturo Nuara ²; Maddalena Fabbri-Destro ¹; Pietro Avanzini ¹¹ *CNR-Istituto di Neuroscienze, sede di Parma*² *Dipartimento di Medicina e Chirurgia, Università di Parma*³ *School of Advanced Studies, Center for Neuroscience, Università di Camerino***Corresponding Author:** mariachiara.bazzini@gmail.com

Several TMS investigations have demonstrated that action observation (AO) exerts a facilitatory effect on corticospinal excitability (CSE). In a large-scale study involving over 100 participants, we observed that AO not only increased MEP amplitude but also significantly reduced its variability. These findings suggest that the baseline variability in MEPs amplitude (when motor rhythms are synchronized) compared to the decreased variability during AO (when motor rhythms are desynchronized) may relate to the oscillatory phase of the underlying mu-rhythm. Indeed, recent studies indicate that, at rest, MEP amplitude is influenced by the phase of motor oscillations at the time of TMS delivery.

We conducted an EEG-TMS study to explore the interplay between CSE facilitation induced by AO and the estimated mu-rhythm oscillation phase at pulse delivery. Twenty-four right-handed participants received 440 TMS pulses over the left primary motor cortex across two randomized conditions: (1) observation of a black screen (REST), and (2) observation of reach-to-grasp actions (AO). Simultaneous recordings of EMG from the rFDI and 64-channel EEG were obtained.

Our analysis reveals that, during REST, MEP amplitude was modulated by mu-rhythm phase, with larger responses during the early rising phase. In contrast, during AO (when mu-rhythm is desynchronized), MEP amplitude was not affected by oscillation phase. A permutation test highlighted significantly higher MEPs amplitude during the rising phase at REST compared to a shuffled distribution. These findings may explain the greater CSE variability at REST and support the identification of reliable predictors for selecting good candidates for action observation treatment.

If you're submitting a symposium talk, what's the symposium title?:

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Yes

Semantic Memory: A Multidimensional System Under Control / 820

The multidimensionality of abstract concepts

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The embodied cognition framework, when applied to concrete concepts, highlights the central role of sensory-motor experience in shaping conceptual knowledge. Empirical evidence supports the idea that concrete concepts are represented across distributed, multimodal brain regions. Extending this framework to abstract concepts suggests that these too are grounded along multiple experiential dimensions. Each dimension is thought to correspond to specific brain systems engaged by the relevant domain of experience. For instance, abstract concepts related to emotions (e.g., "love") are supported by affective neural systems.

In this context, we quantitatively demonstrate that most abstract concepts reflect a convergence of multiple salient experiential dimensions. Nonetheless, certain dimensions may be more relevant in capturing a core meaning of specific subsets of abstract knowledge than others. By identifying the most salient dimensions, we further report evidence from behavioural paradigms and brain stimulation studies in both healthy individuals and patients with neurodegenerative diseases. These findings support the existence of distinct types of abstract concepts—such as those related to space, time, social interaction, and quantity—each associated with partially dissociable neural substrates. In conclusion, while some experiential dimensions may uniquely characterize particular abstract concepts, our results underscore the value of a quantitative, multidimensional approach. Such a framework offers a more comprehensive account of abstract concept representation and should be carefully considered in future investigations of their neural correlates.

If you're submitting a symposium talk, what's the symposium title?:

Semantic Memory: A Multidimensional System Under Control

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Psicometria per la salute e la sostenibilità / 511

Instruments measuring (health-related) quality of life in people with multiple sclerosis: a systematic review following COSMIN

guidelines

Authors: Edoardo Donarelli¹; Andrea Giordano²; Anna Toscano¹; Davide Marengo¹; Giampaolo Brichetto³; Eleonora Cocco⁴; Silvia Testa⁵; Alessandra Solari⁶; Rosalba Rosato¹

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Background. There are many patient-reported outcome measures (PROMs) of quality of life (QoL) and health-related QoL (HRQoL) in MS. However, a comprehensive assessment of the most suitable (HR)QoL PROMs for use in an evaluative application is lacking. This systematic review aimed to assess the psychometric properties of (HR)QoL PROMs for people with MS.

Methods. We conducted a systematic review following the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) methodology (PROSPERO 2024; CRD42024507743). We searched MEDLINE, EMBASE, CINAHL, and PsycINFO databases. We included studies if their aim was to evaluate at least one psychometric property of a generic/MS-specific (HR)QoL PROM. Instruments with evidence for sufficient content validity and internal consistency were recommended, while those with high quality evidence for any insufficient measurement property were unrecommended.

Results. We screened 3628 abstracts, reviewed 267 full-text articles, and included 144 studies. 35 PROMs were identified including 16 generic (HR)QoL and 19 MS-specific (HR)QoL instruments. Overall, hypotheses testing for construct validity (convergent and known-groups validity), internal consistency, test-retest reliability, and structural validity were the most investigated measurement properties. Criterion validity, measurement error and cross-cultural validity/measurement invariance were the least studied.

Seven instruments were recommended for use: LMSQoL, MSQoL-54, MSIS-29, MusiQoL, NeuroQoL, MSQoL-29, and SQoL.

Conclusions. This review identified evidence in support of (HR)QoL MS instruments. Our findings will guide clinicians to select the most suitable (HR)QoL instruments and provide researchers with insight into gaps in the literature. Measurement error and cross-cultural validity/measurement invariance should be further investigated.

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PSICOMETRIA PER LA SALUTE E LA SOSTENIBILITÀ

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No

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche /
513

Mu Rhythm Modulation during Action Recognition in Williams Syndrome: A Window into Atypical Social Cognition

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Williams syndrome (WS) is a rare neurodevelopmental condition marked by cognitive delays and atypical social profiles. This study examined the neural mechanisms underpinning action prediction in WS through electroencephalographic (EEG) recordings of mu rhythm - a marker of sensorimotor simulation - during a probabilistic action prediction task. Participants included individuals with WS, an IQ-matched group with intellectual and developmental disabilities (IDD), and healthy controls (HC). All groups were assessed on their ability to use contextual cues to predict both human actions and non-biological shape movements during EEG recording.

Behaviorally, individuals with WS demonstrated preserved sensitivity to contextual probabilities, similarly to HC participants, consistent with previous findings of partially preserved use of contextual cues to predict social events. EEG analyses revealed that, in HC participants, mu event-related desynchronization (ERD) was modulated by both task type and cue probability, underscoring the engagement of sensorimotor simulation in action prediction. In WS, although mu ERD was attenuated, it was selectively modulated in trials with moderately informative cues, suggesting a non-typical yet context-sensitive neural response. In contrast, IDD participants showed neither behavioral nor neural modulation, alongside globally attenuated mu suppression.

The findings highlight both shared and distinct neural dynamics in WS and HC, and shed light on the mechanisms supporting action understanding in atypical development. By combining behavioral and neural data, this study offers new insights into the neurocognitive architecture of social cognition in WS and underscores the value of mu rhythm as a window into social processing in atypical development.

If you're submitting a symposium talk, what's the symposium title?:

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche

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Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione / 826

Attention rehabilitation in depression: preliminary evidence on the effectiveness of ABM

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Co-authors: Isotta Bilancia²; Eleonora Tosi³; Arianna Mastrocesare⁴; Massimo Pizzato⁵; Stefania Bracci⁵; Sabrina Fagioli⁶; Simona Monaco²

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Individuals with depression tend to exhibit difficulties in attentional control which leads them to persistently focus on negatively valenced information. Recent studies suggest that such attentional biases (AB) can be reduced through Attention Bias Modification (ABM) training, resulting in a decrease in depressive symptoms. Although ABM represents an accessible and well-tolerated treatment, evidence for its clinical efficacy is still inconsistent

Twelve participants with subclinical anxiety and depressive symptoms took part in a longitudinal

fMRI study. Attentional biases were assessed using an emotional version of the dot-probe task, in which we presented on a screen two faces—one emotionally charged (threatening or happy) and one neutral—positioned to the left and right of a central fixation point, followed by a small black dot. Participants were instructed to respond as fast as possible whenever they saw the black dot by pressing a button. Preliminary data indicate that, before treatment, participants respond more quickly to the dot when it appears in the same spatial location as a threatening face, but not when it appears in place of a positive face. This tendency to selectively orient attention toward negative stimuli decreases after the training.

These results suggest a possible restoration of disengagement and reallocation mechanisms of spatial attention following participation in the ABM program. Neuroimaging analysis will complement the behavioral findings by helping to identify the neural correlates underlying this attentional deficit.

If you're submitting a symposium talk, what's the symposium title?:

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione

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Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology / 837

On the Role of Posterior Connectivity in Learning and Exploiting Statistical Regularities: A Neuromodulation and EEG Study

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Introduction

According to the predictive coding framework, perception results from integrating sensory inputs with prior knowledge. Past experience constitutes a fundamental source of priors by enabling the extraction of statistical regularities from the environment, a process known as statistical learning. A major challenge is to understand how learned statistics are implemented within perceptual systems to guide behavior. Recent studies highlight the role of parieto-occipital networks in transmitting top-down predictions, with parietal regions modulating occipital activity through oscillatory dynamics within the alpha band. However, causal evidence linking connectivity within these networks to statistical learning processes remains scarce. Here, we used cortico-cortical paired associative stimulation (ccPAS) to selectively modulate network connectivity and directly test its contribution to perceptual inference and statistical learning mechanisms.

Method

We aimed to assess the role of posterior networks in perceptual decision-making using the two-flash fusion task, in which different cues predicted different stimulus probabilities. Cue-stimulus associations were implicit and required statistical learning. Participants underwent different ccPAS protocols while EEG activity was recorded. Three groups were tested: V5-to-V1, IPS-to-V1 ccPAS, and sham stimulation.

Results

Participants successfully acquired cue-stimulus associations, exhibiting significant cue-related modulations in behavioral responses. Post-ccPAS, behavioral differences emerged across the three groups, reflecting distinct learning patterns. EEG analyses further revealed changes in oscillatory activity within the alpha band, suggesting a network-specific modulatory effect of ccPAS.

Conclusions

Our findings demonstrate the role of implicit statistical learning in shaping perceptual decisions and

provide causal evidence for the distinct contributions of occipital and parieto-occipital networks in predictive perceptual processes.

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Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology

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Yes

Semantic Memory: A Multidimensional System Under Control / 809

Multidimensional abstract concepts in interactive tasks

Author: Anna M. Borghi¹

Co-authors: Angelo Mattia Gervasi ²; Chiara De Livio ²; Chiara Fini ²; Claudia Mazzuca ²; Fernando Maggio ²; Ilenia Falcinelli ²

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Abstract concepts (e.g., fantasy, republic), although not dichotomously opposed to concrete concepts (e.g., hammer, cherry), differ from them in the weight of many semantic dimensions –for abstract concepts, the linguistic, inner, and social experience weigh more than the sensorimotor one. Recent literature has highlighted the need to identify various subkinds of abstract concepts, from emotions to numbers, each characterized by multiple but different dimensions having different weights. In the talk, I will focus on the role of the social dimension. In light of recent evidence obtained through ratings and interactive behavioral tasks, I will argue that abstract concepts evoke uncertainty and the tendency to rely on others to learn, negotiate, or outsource knowledge. I propose that this tendency may be more or less pronounced depending on the kind of concept. I will also highlight the importance of interactive tasks, rich in multimodal information, to capture fine-grained differences between concept kinds characterized by different dimensions.

If you're submitting a symposium talk, what's the symposium title?:

Semantic Memory: A Multidimensional System Under Control

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche / 528

Cerebellar predictive mechanisms in social cognition: a study on patients with cerebellar neurodegenerative disease.

Author: Libera Siciliano¹

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Introduction: Current neuroscientific literature suggests the cerebellum is a key node in the predictive social brain. Although social and mentalizing deficits have been observed in patients with cerebellar neurodegenerative diseases (CNDp), social-prediction processes have not been systematically studied. To address this, we examined social-prediction, social-cognition abilities, and mentalizing brain networks in CNDp using tailored tasks and structural and functional MRI.

Methods: Eighteen adult CNDp and twenty-six matched controls (CN) completed three computerized prediction tasks, where contextual cues set expectations for interpreting and predicting ambiguous emotional expressions, personality traits, or objects. Participants were also administered two social-cognition tests: the Reading the Mind in the Eyes Test (RMET) and the Faux Pas Test. All underwent 3T brain MRI scans, including T1-weighted and resting-state functional connectivity (FC) sequences. Voxel-based morphometry (VBM) and FC analyses were used to assess cerebellar volume differences and FC within the mentalizing cerebellar-cerebral network.

Results: Compared to CN, CNDp showed impaired performance on the personality traits task, which taps into advanced mentalizing compared to the other prediction tasks. CNDp also performed worse on the Faux Pas Test, which demands higher inferential mentalizing, compared to the RMET. VBM revealed widespread cerebellar atrophy in CNDp, extending to posterior lobules associated with social processing. These areas also showed altered FC with mentalizing cerebral regions.

Conclusion: These results indicated that cerebellar alteration affects social cognition and social prediction, especially when stimuli reflect advanced mentalizing processes. In addition, they confirmed the role of the cerebellum in predicting social stimuli based on previous contextual knowledge.

If you're submitting a symposium talk, what's the symposium title?:

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche

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No

Psicometria per la salute e la sostenibilità / 857

Inferenza automatizzata del consumo problematico di alcol da social media tramite modelli linguistici di grandi dimensioni: validazione con misure self-report di consumo di alcol, personalità e benessere psicologico

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Questo contributo esplora il potenziale dei modelli linguistici di grandi dimensioni (Large Language Models, o LLM) per inferire il rischio di consumo problematico di alcol a partire da contenuti pubblicati su piattaforme social media. In un primo studio (N = 208), due LLM (Gemini 1.5 Pro e GPT-4o), sono stati utilizzati con un approccio zero-shot prompting per stimare il consumo problematico di alcol in post pubblicati su Facebook. Le inferenze dei modelli linguistici hanno mostrato buona convergenza e una correlazione moderata con lo strumento self-report AUDIT-C, con accuratezza maggiore rilevata tra i partecipanti con post più recenti. In un secondo studio (N = 2222) lo stesso prompt è stato utilizzato per classificare gli utenti in base al rischio di consumo problematico di alcol e confrontare i gruppi (basso vs. alto rischio) rispetto a tratti di personalità e indicatori di benessere psicologico. Il gruppo ad alto rischio ha riportato livelli significativamente più elevati di estroversione, impulsività e sensation seeking, e livelli più bassi di stabilità emotiva e amicalità. Non sono emerse differenze significative in termini di salute mentale o qualità della vita percepita, ma gli utenti classificati a rischio di consumo problematico di alcol hanno riferito un miglioramento soggettivo

della salute fisica rispetto all'anno precedente. I risultati evidenziano la validità preliminare degli LLM come strumento non invasivo per il monitoraggio del rischio alcolico aprendo prospettive per lo screening non intrusivo attraverso l'analisi di contenuti social media.

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Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione / 849

Il ruolo gerarchico dell'osservatore influenza l'orientamento dell'attenzione verso i volti: evidenze da uno studio di eye-tracking

Authors: Giorgia Ponsi¹; Michael Schepisi²; Donato Ferri³; Francesco Bianchi³; Chiara Consiglio³; Laura Borgogni³; Salvatore Maria Aglioti¹

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L'attenzione è un processo cognitivo che permette di selezionare alcuni stimoli ambientali, ignorandone altri. In contesti sociali, l'attenzione visiva viene rapidamente diretta verso altri individui, in particolare nella direzione in cui orientano il proprio sguardo. Questo fenomeno, noto come gaze-following, può essere influenzato da meccanismi top-down. Evidenze sperimentali hanno infatti mostrato come l'attenzione sia diretta più rapidamente verso lo sguardo di individui con alto vs. basso status sociale. Inoltre, studi condotti su primati non umani indicano come questo effetto sia modulato dallo status dell'osservatore all'interno di una gerarchia sociale. In questo studio, abbiamo reclutato 55 partecipanti appartenenti a un'organizzazione con una struttura gerarchica e li abbiamo suddivisi in basso (n = 29) e alto (n = 26) rango, in base al ruolo ricoperto. I partecipanti dovevano eseguire movimenti oculari nella direzione indicata da un punto di fissazione colorato. La direzione della saccade poteva coincidere (condizione congruente) o meno (condizione incongruente) con la direzione dello sguardo di volti distrattori, manipolati selettivamente per il tratto della dominanza (bassa, neutra e alta). I movimenti oculari sono stati registrati con un eye-tracker a infrarossi ad alta risoluzione. Un indice di gaze-following, calcolato sottraendo i tempi di reazione saccadici dei trial congruenti da quelli incongruenti, ha messo in evidenza un effetto del rango: i partecipanti di alto rango risultavano maggiormente interferiti dai volti distrattori, indipendentemente dal livello di dominanza dei volti, rispetto a quelli di basso rango. Questi risultati indicano che una variabile sociale come il ruolo gerarchico influenzi la permeabilità individuale all'informazione sociale.

If you're submitting a symposium talk, what's the symposium title?:

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione

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Semantic Memory: A Multidimensional System Under Control / 806

Divided Yet United: Mapping the Interplay of Semantic and Executive Control

Author: Maria Montefinese^{None}

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Control processes play a fundamental role in everyday life, guiding the activation of semantic representations and supporting the retrieval of task-relevant information to enable appropriate inferences. A growing body of research suggests that semantic control (SC)—control processes specific to the semantic domain—interacts with broader executive functions (EF), which govern goal-directed behavior and higher-order cognition.

In these studies, we investigated the relationship and specificity of SC and EF in information retrieval across childhood and adulthood. Participants completed a battery of online tasks designed to assess SC and EF using both semantic and visuospatial stimuli. We applied structural equation modeling to the various behavioral measures, testing competing theoretical models in which SC is posited as (1) independent from, (2) related to, or (3) equivalent to EF. In the child sample, we also examined developmental trajectories by comparing semantic and executive control abilities across different task types.

Our results align partially with the controlled semantic cognition framework and converge with existing neuropsychological and neuroimaging evidence. They suggest that SC and EF are best characterized as partially distinct but strongly interrelated systems sharing core mechanisms. These findings underscore the importance of considering both the unity and diversity of control processes when developing a comprehensive theory of cognitive control.

If you're submitting a symposium talk, what's the symposium title?:

Semantic Memory: A Multidimensional System Under Control

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Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology / 890

Alpha oscillations causally support the integration of expectations in metacognitive confidence

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Introduction

Confidence—the capacity to assess the correctness of one's own decisions—is a central component of metacognitive evaluation. While perceptual choices are increasingly understood to be shaped by prior expectations, the extent to which these expectations also bias confidence judgments remains largely unknown. Moreover, the oscillatory mechanisms supporting this integration have yet to be fully explored.

Methods

We conducted two complementary behavioral and EEG studies to examine how expectations shape confidence and to identify their neural underpinnings. We then performed a TMS-EEG experiment

on an independent sample to test the causal role of posterior alpha oscillations in this process. Specifically, we applied a protocol designed to functionally inhibit posterior regions and examined its effects on (a) the neural signatures of prior integration, and (b) the behavioral ability to incorporate priors into confidence judgments.

Results

Across studies, we found that expectations systematically biased confidence: participants were more confident when their decisions matched their expectations. This effect was supported by modulations in alpha-band activity over posterior electrodes. Crucially, perturbing this activity via TMS disrupted both the alpha signatures and the confidence bias, abolishing the influence of expectations-like information on confidence.

Discussion

These findings provide causal evidence that alpha oscillations in posterior regions support the integration of expectations into metacognitive confidence. Inhibiting these rhythms impaired the brain's ability to incorporate prior information into confidence judgments, revealing a key mechanism by which subjective certainty is constructed from top-down information.

If you're submitting a symposium talk, what's the symposium title?:

Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology

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Yes

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche / 997

Emotionally charged stimuli modulate interpersonal space regulation in ASD adolescents: a Virtual Reality study

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During social interactions, we adjust the interpersonal distance we set between ourselves and others depending on how close we prefer to stand relative to an unknown individual. Critically, when the physical boundaries of the personal space are violated, individuals perceive a prompt feeling of discomfort. In this respect, bodily expressions represent important cues during interpersonal exchanges. Previous studies found that the ability to regulate interpersonal space is altered in children with Autism Spectrum Disorder (ASD) who prefer larger interpersonal distances compared to typically developing (TD) children. We hypothesized that emotions play a crucial role in adjusting interpersonal distance, particularly during adolescence when emotion regulation abilities develop. Thus, we investigated whether emotional cues modulate the interpersonal distance in ASD. We recruited 46 adolescents (n=23 TD; n=23 ASD; mean age 12y) and employed a stop-distance task in a VR setting. Participants had to stop an avatar at a comfortable distance while the avatar displayed Happy, Neutral, or Angry emotions through its face and posture. ASD participants preferred a larger interpersonal distance compared to TD peers. Crucially, both groups maintained a greater distance from the Angry than the Neutral and Happy avatars. Emotionally charged stimuli lead to refined adjustments in interpersonal distance both in TD and ASD adolescents. They flexibly shortened and enlarged their preferred distance from a positive or a negative social stimulus, respectively. Thus, emotions are a potential way to regulate social behavior in clinical conditions characterized by socio-affective deficit.

If you're submitting a symposium talk, what's the symposium title?:

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Psicometria per la salute e la sostenibilità / 688

Generazione Z e accettabilità della carne coltivata: profili di consumatori e mappe percettive di burger

Authors: Barbara Loera¹; Giorgia Molinengo¹; Pericle Raverta¹

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Introduzione

Favorire la consapevolezza dei cittadini e promuovere scelte alimentari sane e sostenibili è una delle priorità dell'Agenda ONU 2030. La food transition, che comprende la diversificazione delle diete anche attraverso i novel food (Regolamento UE 2015/2283), mira a ridurre le criticità della produzione convenzionale di alimenti di origine animale. Alcuni alimenti a base di insetti sono già stati autorizzati in UE, mentre la carne ottenuta da colture cellulari (carne coltivata) potrebbe essere introdotta in futuro.

Nonostante gli investimenti economici e di ricerca, l'accettabilità della carne coltivata da parte dei consumatori resta una sfida, rendendo fondamentale comprendere i fattori psicologici che ne influenzano l'adozione. Sebbene i giovani mostrino una maggiore apertura rispetto agli adulti, considerarli un gruppo omogeneo rischia di semplificare eccessivamente il fenomeno.

Metodo

In questo contesto, il contributo riporta due studi condotti su un campione italiano della Generazione Z, applicando Latent Profile Analysis (Studio 1) e scaling multidimensionale su burger (Studio 2).

Risultati

Lo Studio 1 (N=395) ha individuato tre profili distinti in base a livelli di tecnofobia alimentare, fiducia negli enti certificatori, disgusto, atteggiamento morale positivo e atteggiamenti cognitivi verso la carne coltivata. Lo Studio 2 (N=114, campione appaiato) mostra che i gruppi denominati "conservatori", "prudenti" e "pionieri" differiscono nella percezione dei burger di carne coltivata rispetto ad altre tipologie di burger come quelli vegetali, a base di insetto o carne convenzionale.

Conclusioni

I risultati evidenziano l'eterogeneità interna alla popolazione giovanile e offrono indicazioni utili per informare lo sviluppo di nuovi prodotti e strategie promozionali mirate.

If you're submitting a symposium talk, what's the symposium title?:

Psicometria per la salute e la sostenibilità

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione / 888

Il ruolo delle emozioni nei bias attentivi e di memoria

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¹ *Dipartimento di Psicologia, Università degli Studi della Campania "Luigi Vanvitelli"*

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La presentazione rivaluta criticamente i risultati di alcuni studi del nostro gruppo che hanno indagato l'interazione tra emozioni, attenzione e memoria in diverse popolazioni e contesti.

In primo luogo, alcuni studi hanno dimostrato che i diversi bias attentivi (AB; facilitazione, evitamento, disancoraggio) verso la minaccia operano con specifici time-course. Inoltre, l'utilizzo dell'eye-tracking ha permesso di verificare che tali bias sono associati a diversi meccanismi attentivi covert e overt.

Un ulteriore studio ha evidenziato che le esperienze traumatiche determinano un evitamento attentivo di volti emotivi correlato con le preoccupazioni legate all'ansia. Inoltre, l'ansia per la salute e la sensibilità all'ansia si associano a una maggiore reattività agli stimoli legati alla salute, suggerendo un'ipervigilanza che può contribuire allo sviluppo di disturbi d'ansia. Similmente, in campioni non clinici, l'induzione di umore negativo in laboratorio può portare a difficoltà nel disancorare l'attenzione dalla minaccia.

Altri studi hanno utilizzato tecniche di stimolazione cerebrale non invasiva per indagare i substrati neuronali dei bias attentivi. I risultati suggeriscono effetti specifici per la corteccia prefrontale dorsolaterale destra e sinistra nell'elaborazione della minaccia, modulati dall'ansia.

Infine, la ricerca sui bias di memoria nell'invecchiamento e nelle condizioni neurodegenerative ha dimostrato la persistenza dei bias nelle condizioni cliniche, sebbene il tipico bias di valenza osservato negli adulti sani risulta alterato o inconsistente nelle popolazioni neurodegenerative, suggerendo potenziali target per la riabilitazione cognitiva.

Nel complesso, questi studi evidenziano la complessità dell'interazione tra emozione e cognizione, fornendo preziose informazioni sui meccanismi e le basi cerebrali dei bias attentivi e di memoria.

If you're submitting a symposium talk, what's the symposium title?:

Attenzione ed emozioni: bias cognitivi e implicazioni per la riabilitazione

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Semantic Memory: A Multidimensional System Under Control / 1035

Open discussion

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche / 1012

Domande e discussione

Corresponding Authors: andrea.ciricugno@unipv.it, maria.arioli@unibg.it

Advanced Applications of Noninvasive Brain Stimulation and EEG in Experimental Psychology / 1032

Open discussion

Attention, Perception and Consciousness / 620**Isolating perceptual and post-perceptual activity thanks to iconic memory and a partial report paradigm****Author:** Davide Bonfanti¹**Co-authors:** Sonia Mele ¹; Elena Bertacco ¹; Chiara Mazzi ¹; Silvia Savazzi ¹¹ *Università degli Studi di Verona***Corresponding Author:** davide.bonfanti@univr.it

The electrophysiological distinction between proper neural correlates of visual consciousness and post-perceptual processes remains a debated topic, with many questions about the timing and location of the respective neural mechanisms still open. To shed light on this matter, we employed a partial report paradigm: this allowed us to keep activity associated with stimulus perception identical across reporting conditions while modulating only the processes linked to reporting.

Data were collected from 23 participants while recording EEG. Stimuli were composed of six letters, symmetrically and circularly spread around a fixation cross, and lasted 100 ms. After the stimulus, an acoustic tone indicated to participants which side of the stimulus (left or right) to report. An experimenter then wrote down the reported answer.

ERP analyses revealed differences between the “Report Right” and “Report Left” conditions, particularly between 850 ms to 1100 ms and involving right and left parieto-occipital positivity. Moreover, this parieto-occipital positivity, peaking at 1060 ms, is negatively correlated with accuracy and positively correlated with the number of intrusion errors.

The absence of early electrophysiological differences between the two reporting conditions, alongside the presence of later modulations, confirms –following the iconic memory framework –that the conscious content is identical between the two conditions, with EEG differences related only to post-perceptual processes. Specifically, correlations suggest that these processes might represent filtering of the uncued side, with higher amplitudes corresponding to a higher risk of intrusion from uncued letters, resulting in an overall lower accuracy.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Emotions and Motivations 3 / 664****Socioeconomic Status and Academic Motivation: A Meta-Analysis and Systematic Review grounded on Self-Determination Theory****Author:** Michele Zacchilli^{None}**Co-authors:** Andrea Chirico ¹; Barbara Cazzolli ¹; Elisa Cavicchiolo ²; Fabio Alivernini ³; Fabio Lucidi ⁴; Giulia Raimondi ¹; James Dawe ⁵; Sara Manganelli ¹; Tommaso Palombi ⁴¹ *Università degli Studi di Roma "La Sapienza"*² *Università degli studi di Roma "Tor Vergata"*³ *Dipartimento di Psicologia dei Processi di Sviluppo e Socializzazione, Università La Sapienza di Roma*⁴ *Sapienza Università di Roma*⁵ *Dipartimento di Scienze Umane e Sociali, Universitas Mercatorum*

Corresponding Author: michele.zacchilli@uniroma1.it

SES has been studied extensively both as a predictor of academic achievement and student well-being, and alternatively, as a moderator between motivation and academic achievement. Yet, its direct association with academic motivation (AM) remains underexplored. Furthermore, there's no consensus about how SES should be measured in the educational context, and there's significant heterogeneity about which instrument was used to measure AM. Therefore, the present systematic review and meta-analysis focused on the relationship between socioeconomic status (SES) and academic motivation (AM), grounded in self-determination theory, among elementary to high school students. A systematic search yielded 5215 articles, with 13 studies (N = 677,405) meeting inclusion criteria. Random-effects models were used to estimate main effects, and mixed-effects models to analyze potential moderators, including SES indicators, AM measurement instruments, and educational level. Analyses were conducted using R and the "metafor" package. A positive small significant effect was found for intrinsic, identified, and introjected regulation, while a negative small significant effect was found for amotivation. The present research suggests that, even though research on this topic remains limited, there is still a small but significant effect on almost all the forms of behavioral regulation, highlighting another effect of socio-economic disparity on the education of students. Future research should focus on understanding more deeply the motivational trajectories of disadvantaged students to help them overcome this hindering effect.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Language, reading and music / 699

L'Italian Crowdsourcing Project: Tempi di riconoscimento visivo, accuratezza e prevalenza per 130.495 parole italiane

Author: Simona Amenta¹

Co-authors: Andrea Gregor de Varda²; Pawel Mandera³; Emmanuel Keuleers⁴; Marc Brysbaert⁵; Marco Marelli¹

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Introduzione: Nonostante l'italiano sia oggetto di numerosi studi psicolinguistici, mancano ancora risorse su larga scala per l'analisi del linguaggio. Negli ultimi anni, il *crowdsourcing* si è affermato come metodo efficace per raccogliere dati sul riconoscimento delle parole, coinvolgendo ampi gruppi di partecipanti con caratteristiche demografiche diverse, al di fuori dei tradizionali contesti di laboratorio (Keuleers & Balota, 2015). Crowdsourcing Vocabulary Projects sono già stati sviluppati per varie lingue europee (Amenta, 2024).

Obiettivi: Questo studio presenta l'Italian Crowdsourcing Project (ICP), un ampio dataset contenente tempi di risposta e accuratezza nel riconoscimento di 130.495 parole, rendendolo il più esteso del suo genere per numero di item.

Metodi: I dati sono stati raccolti tramite un compito online di conoscenza delle parole (*word knowledge task*), a cui hanno partecipato 156.625 madrelingua italiani, per un totale di 15.906.229 datapoint (in media 85,65 osservazioni per parola).

Risultati: I tempi di reazione dell'ICP mostrano una forte correlazione ($r = .78$) con quelli ottenuti in un tradizionale esperimento di laboratorio con la stessa procedura. Inoltre, gli effetti delle principali variabili psicolinguistiche (es. frequenza, lunghezza) risultano replicabili in questo dataset. Infine, per la prima volta in italiano, è stata anche calcolata e studiata la *prevalenza* delle parole (cioè la percentuale di persone che conoscono una determinata parola), confermando risultati osservati in altre lingue.

Conclusioni: L'ICP è disponibile pubblicamente e rappresenta una risorsa fondamentale per lo studio del linguaggio, utile sia per la validazione cross-linguistica sia per l'analisi delle differenze individuali.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Methodology 2 / 988

Validation study of the Italian version of Math Anxiety Questionnaire for Adults (MAQA)

Author: Laura Dattilo¹

Co-authors: Michela Balsamo²; Giorgia D'Ignazio²; Marco Innamorati³; Leonardo Carlucci⁴

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Corresponding Author: laura.dattilo@unifg.it

Understanding math anxiety in adults is important because it leads to a cycle of low confidence and anxiety that can affect academic and/or work performance. It also was very challenging given that most existing tools focus this construct on younger populations and school-related contexts—such as classrooms, teachers, and exams—, raising concerns about their relevance and ecological validity for grown-up experiences. To assess specifically math anxiety in adults, Szczygieł (2022) developed the Math Anxiety Questionnaire for Adults (MAQA), a 19-item self-report measure using a 4-point Likert scale. The present study aims to evaluate dimensionality, convergent and criterion-related validity and reliability of the Italian version of the MAQA. A sample of 375 university students of Psychology (female = 327; 87.2%), from university of Foggia and Chieti, aged 18–61 ($M = 21.42$, $SD = 6.50$), completed a series of questionnaires. Both Explorative and Confirmatory Factor Analysis supported the unidimensional structure of the MAQA consistently with the original validation. Significant correlations with the STICSA-State ($r = .237$, $p < .01$) and STICSA-Trait ($r = .265$, $p < .01$) and SAS total score ($r = .485$, $p < .01$) confirmed convergent validity, while associations with MASA subscales (from $r = .054$, $p = .300$, to $r = .428$, $p < .01$) and MPP ($r = -.374$, $p < .01$) supported criterion validity. Further, MAQA showed excellent reliability coefficients. Overall, from these findings the MAQA shows to be a psychometrically sound tool for assessing math anxiety in adult populations across varied contexts.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Health, Sport and Wellbeing / 679

Dal Rischio alla Risorsa: Una Riflessione Critica sull'Uso Trasformativo dei Videogiochi nella Salute Mentale

Author: Arianna Boldi¹

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Nel dibattito psicologico sui videogiochi, è ancora dominante una narrazione patologizzante che associa le tecnologie ludiche prevalentemente a dipendenza, isolamento e disagio. In questa presentazione propongo una prospettiva alternativa, che considera il videogioco come pratica situata, mediata e potenzialmente trasformativa per la salute mentale.

Partendo da una revisione sistematica della letteratura scientifica internazionale, delinea lo stato dell'arte sull'uso terapeutico dei videogiochi commerciali a supporto della regolazione emotiva, del trattamento e della diagnosi di alcune condizioni di rilevanza psicologica - quali, ad esempio, depressione, ansia, disturbo post-traumatico da stress, isolamento sociale e neurodiversità. Se, da una parte, gli studi mostrano le potenzialità dell'utilizzo delle tecnologie videoludiche per il benessere mentale, si evidenzia anche una carenza significativa di attenzione agli aspetti di progettazione mirata della tecnologia, ai criteri di scelta dei giochi e alle modalità concrete di integrazione degli interventi nelle pratiche cliniche esistenti. Questo richiede una maggiore integrazione e collaborazione con esperti di interazione uomo-macchina.

Nella seconda parte propongo un cambio di prospettiva: esplorare come i videogiochi siano già, per molte persone, strumenti informali di gestione di sé, autoespressione creativa, coping in situazioni di stress e momenti difficili, anche al di fuori di contesti terapeutici formalizzati. Presenterò esempi tratti dalle mie ricerche qualitative nell'ambito esports per mostrare come il rapporto tra gioco e salute sia sfumato, situato e complesso, richiedendo modelli interpretativi più ricchi e meno normativi rispetto a quelli attualmente dominanti.

If you're submitting a symposium talk, what's the symposium title?:

Il ruolo dei videogiochi per la salute: aspetti innovativi e future direzioni

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Health, Sport and Wellbeing / 683

Il ruolo dei videogiochi per la promozione della qualità del sonno

Author: Oreste De Rosa¹

Co-authors: Alessio Lustro¹; Francesca Conte¹; Gianluca Ficca¹

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La ricerca sulle relazioni tra videogiochi e sonno si è per anni focalizzata principalmente sui possibili effetti negativi del gaming eccessivo e/o inadeguato sulla qualità del sonno (Kemp et al., 2017; Peracchia & Curcio, 2018), indagando assai meno una serie di aspetti che rendono tale rapporto più articolato. Una nostra recente review sistematica (De Rosa et al., 2024) ha mostrato come gli effetti dei videogiochi sulla qualità del sonno possano dipendere da numerosi fattori di modulazione, tra cui la frequenza di utilizzo dei videogiochi, la durata e la locazione temporale delle sessioni di gioco, la tipologia di videogioco e la piattaforma utilizzata, nonché fattori legati alle differenze interindividuali.

Questa presentazione, illustrando preliminarmente le evidenze dei più recenti studi sperimentali sulle relazioni tra videogiochi e sonno (e.g., Cerasuolo et al., 2019; De Rosa et al., 2025), si propone di offrire una panoramica sul ruolo dei succitati fattori di modulazione e di porre l'accento sul sorprendentemente trascurato ruolo dei meccanismi di apprendimento per la qualità del sonno. Fornendo ai giocatori un "ambiente arricchito", fatto di obiettivi, sfide, conflitti e apprendimento continuo, i videogiochi rappresentano vere e proprie sessioni di training in grado di stimolare diversi domini cognitivi: sarebbero in tal modo innescati processi di consolidamento e rielaborazione mestica sonno-dipendenti, che a loro volta appaiono promotori di caratteristiche strutturali del sonno (continuità, stabilità, organizzazione) molto rilevanti per la sua buona qualità. Su tale ipotesi saranno mostrati alcuni interessanti paradigmi di studio e incoraggianti dati preliminari.

If you're submitting a symposium talk, what's the symposium title?:

Il ruolo dei videogiochi per la salute: aspetti innovativi e future direzioni

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Language, reading and music / 492

Oltre i Confini del Corpo: Un'analisi comparativa delle rappresentazioni concettuali umane e dell'intelligenza artificiale

Authors: Claudia Repetto¹; GIUSEPPE RIVA²; JAMES HAMPTON^{None}; ELISA SCERRATI³

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I rapidi progressi dei Large Language Models (LLM) come ChatGPT hanno sollevato interrogativi fondamentali sulla loro capacità di approssimare la cognizione umana. Mentre i LLM eccellono nella competenza linguistica formale, la loro competenza linguistica funzionale—che comprende conoscenza del mondo, modellazione delle situazioni e fondamento senso-motorio—rimane oggetto di dibattito. Questo studio esamina criticamente il framework dell'*embodied cognition* confrontando le valutazioni umane e quelle generate da ChatGPT in merito alle caratteristiche senso-motorie e di dominanza per 959 parole italiane. Basandoci sul presupposto che l'*embodied cognition* necessiti di esperienze corporee, abbiamo ipotizzato che ChatGPT si sarebbe allineato poco con i giudizi umani per le dimensioni sensoriali e motorie, ma avrebbe dimostrato una migliore corrispondenza per le valutazioni astratte di dominanza. I nostri risultati hanno confermato che le correlazioni tra le valutazioni umane e quelle di ChatGPT erano trascurabili per tutte e sei le modalità sensoriali (vista, udito, tatto, olfatto, gusto, interocezione) e che l'IA non è riuscita a generare valutazioni motorie significative. Tuttavia, è emersa una correlazione significativa per le valutazioni di dominanza, sebbene con una modesta varianza condivisa (1,94%), suggerendo che i LLM possono approssimare dimensioni concettuali meno dipendenti dall'esperienza corporea diretta. Questi risultati sottolineano i limiti dei LLM nel replicare la cognizione umana e evidenziano il ruolo essenziale del *grounding* senso-motorio nell'elaborazione concettuale. Il nostro studio contribuisce al discorso in corso sui meccanismi cognitivi alla base dell'IA e sulla loro divergenza dalla cognizione umana, riaffermando la centralità dell'*embodiment* nelle rappresentazioni mentali.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Emotions and Motivations 3 / 839

Il ruolo delle emozioni e dei fattori individuali in un compito di discriminazione percettiva.

Authors: LUIGI LORENZO LUCA NAPOLITANO¹; Michela Possenti¹; Michela Romano¹; Santa Iachini¹; Francesco Ruotolo¹

¹ *Università della Campania Luigi Vanvitelli.*

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Alcuni studi hanno mostrato che la paura migliora la sensibilità al contrasto visivo, facilitando la discriminazione di stimoli in condizioni di scarsa visibilità (Phelps et al., 2006). Tuttavia, non è chiaro se questo vantaggio percettivo si estenda alle emozioni positive, che promuovono un'elaborazione globale degli stimoli (Uddenberg & Shim, 2015). Inoltre, fattori individuali (alessitimia, enterocezione, umore) potrebbero modulare questi effetti.

Metodo: 50 studenti (25 maschi, $M=24.4$ anni $ds=2.3$) hanno giudicato se delle frecce nere su sfondo bianco, con diverso livello di contrasto visivo, erano disposte in orizzontale o in verticale. Le frecce erano precedute dalla presentazione di volti emotivi (felici o impauriti) o neutri, sia dritti che capovolti. Sono stati registrati i tempi di risposta e somministrati TAS-20 (alessitimia), MAIA (enterocezione) e PANAS (umore).

Risultati: I partecipanti sono stati più lenti in presenza di volti felici rispetto a quelli impauriti, specialmente con stimoli meno discriminabili (basso contrasto). Inoltre, quando gli stimoli erano preceduti da volti capovolti/neutri, all'aumentare dell'umore positivo rallentavano i tempi di risposta, mentre all'aumentare della consapevolezza enterocettiva i tempi di risposta diminuivano.

Conclusioni: Le emozioni positive, a differenza di quelle negative, rallentano l'elaborazione visiva fine, supportando l'ipotesi di un trade-off tra analisi globale e locale. Inoltre, le differenze individuali modulano la percezione solo quando mancano chiari segnali emotivi. Questi risultati supportano l'idea che la percezione visiva sia il risultato di molteplici fattori legati sia alla qualità della stimolazione ambientale sia alle predisposizioni individuali.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Attention, Perception and Consciousness / 855

Correlati magnetoencefalografici del controllo inibitorio in risposta al trauma: dalla resilienza al PTSD

Author: Massimo Bertoli¹

Co-authors: Pierpaolo Croce²; Filippo Zappasodi²; Rosalia Di Matteo²; Mauro Pettorruso²; Giovanni Martinotti²; Marcella Brunetti³

¹ *Università G. d'Annunzio di Chieti-Pescara*

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Pazienti con disturbo da Stress Post-Traumatico (PTSD) possono mostrare deficit nel controllo inibitorio rispetto ad individui traumatizzati che non sviluppano il disturbo; tuttavia, i meccanismi neurocognitivi in risposta al trauma che permettono di distinguere tra resilienza e PTSD risultano poco esplorati.

Mediante l'uso del Flanker task a disegno fattoriale durante registrazione magnetoencefalografica (MEG) indaghiamo le dinamiche neurali e comportamentali di tre forme ortogonali di conflitto cognitivo: conflitto rilevante Stimolo-Risposta a breve termine (rS-R), conflitto automatico Stimolo-

Stimolo (AS-S) e conflitto irrilevante automatico Stimolo-Risposta (iAS-R). Lo studio includeva 40 individui esposti a trauma (20 con PTSD, 20 resilienti).

A livello comportamentale, il gruppo PTSD rispondeva più rapidamente ma meno accuratamente nei trial incongruenti per il conflitto iAS-R. Tale facilitazione rifletterebbe un'elaborazione atipica del conflitto automatico e irrilevante dovuta ad una soppressione dei distrattori. L'accuratezza risultava selettivamente compromessa nei trial con una sola fonte di conflitto, evidenziando difficoltà nell'ingaggio di meccanismi di controllo in presenza di interferenze parziali coerentemente con modelli di elaborazione cognitiva rigida e ipercontrollata nel PTSD. Al contrario, i controlli resilienti mantenevano performance stabili e accurate in tutte le condizioni, indicando un coinvolgimento più efficiente dei meccanismi di controllo cognitivo.

I dati MEG preliminari indicano alterazioni nell'attività in banda alpha e gamma prefrontale mediale e nelle risposte evocate associate al monitoraggio e alla risoluzione del conflitto nel PTSD, specialmente in trial ad alto conflitto. I risultati definitivi chiariranno ulteriormente l'architettura funzionale del controllo inibitorio nel PTSD e nella resilienza al trauma.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Methodology 2 / 642

Valutazione dell'Indice di Overlapping (η) tramite Simulazione: Un Confronto con gli Effect Size Tradizionali

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L'Indice di Overlapping (η) stima l'area condivisa tra due densità empiriche tra 0 a 1 (0 - nessuna sovrapposizione, 1 - sovrapposizione completa). In contesti sperimentali, dove le distribuzioni empiriche sono frequentemente asimmetriche, e.g. tempi di reazione e accuratezza, η offre una misura dell'effetto meno distorta rispetto agli indici tradizionali. Questo studio indaga le proprietà statistiche di η rispetto agli indici di Effect Size tradizionali comunemente utilizzati in psicologia, tra cui il d di Cohen, il g di Hedges, l'U3 di Cohen e il Common Language Effect Size (CLES). Utilizzando distribuzioni skew-normal, abbiamo simulato dataset in condizioni variabili di differenza media, variabilità, asimmetria e dimensione campionaria, ottenendo un disegno di simulazione con 625 condizioni sperimentali. I dati indicano che η fornisce stime più robuste sotto condizioni di asimmetria e varianze eterogenee, criticità comuni nei dati sperimentali delle scienze cognitive e comportamentali. Pertanto η si propone come utile misura per la valutazione degli Effect Size nella ricerca psicologica in alternativa o come complemento agli indici tradizionali.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Language, reading and music / 550

L'elaborazione semantica in parafovea durante la lettura. Evidenze da studi comportamentali.

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Studi precedenti hanno indagato l'elaborazione semantica di parole in parafovea attraverso l'utilizzo del paradigma Rapid Parallel Visual Presentation (RPVP) che prevede la presentazione simultanea di due parole, una in fovea (W1) ed una in parafovea (W2), controllate per lunghezza, frequenza d'uso [alta (AF) vs bassa (BF)] e relazione semantica [(no (nRS, 50%) vs sì (RS, 50%)]. Nei lavori precedenti (Rusich et al., 2021; Primativo et al., 2022) i risultati riportano una migliore efficienza nella lettura di entrambe le parole in presenza della RS tra gli stimoli e quando la W1 era di AF. Per escludere la possibilità che questi risultati siano dovuti in parte ad una strategia di guessing, nel presente lavoro abbiamo condotto un esperimento (esp.1) in cui è stata manipolata la proporzione degli stimoli (30% RS e 70% nRS). I risultati emersi sono coerenti con gli studi precedenti, mostrando ancora un vantaggio in caso di RS tra le due parole. Un secondo esperimento (esp.2) ha indagato la distribuzione dell'attenzione visuo-spaziale durante il RPVP, aggiungendo un compito non linguistico (detezione di un probe in parafovea o in fovea). I risultati hanno evidenziato, per entrambe le posizioni del probe, una differenza significativa in termini di accuratezza e tempi di reazione quando le parole erano RS e la W1 ad AF. Dai risultati dei nostri esperimenti concludiamo che, durante la lettura di parole in fovea e parafovea, gli stimoli vengono processati parallelamente fino ad un livello semantico e con una distribuzione visuo-spaziale dell'attenzione allocata su entrambi gli stimoli.

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Emotions and Motivations 3 / 872

Early-life influences on the ability to cope with later stress, adversity, and trauma –A systematic review of original studies in humans and animal models.

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Extensive evidence shows that adverse early-life conditions impact later functioning and increase vulnerability to psychopathology. Conversely, positive experiences, as living in enriched environments, often provide protective effects against later challenges.

A systematic review was conducted on PubMed and Scopus to unbiasedly assess how different early exposures - from neglect to enhanced parental care - affect adult responses to stress, adversity, or trauma. Studies involving healthy humans, mice, and rats, published in English until the 1st of March 2024, were considered. Eligibility required exposures before age 3 in humans or weaning in rodents, with outcomes assessed in adulthood (PROSPERO CRD42024557152).

From 708 initial records, fifteen articles published between 2002 and 2021 were identified. No human studies met criteria, mainly due to difficulty in isolating exposures within the time-window of interest. Conversely, animal studies allow precise manipulation of timing and type of early-life exposures. Such manipulations included neonatal handling, maternal (and littermates) separation and deprivation, limited bedding and nesting materials, and exposure to variations in maternal care. Compared to standard laboratory rearing, adverse conditions result in a behavioral profile characterized by heightened threat sensitivity, escaping behaviors to danger, and passive coping strategies to inescapable stress. Such profile may be advantageous in threatening environments. In contrast, high maternal care or neonatal handling reduced threat alertness, or resulted in more active coping strategies to inescapable stress.

Variations in exposure and outcome assessment methodologies partly explain inconsistencies. Strikingly, regardless of the exposures, maternal care consistently appears to be key in exacerbating or mitigating the outcomes.

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Methodology 2 / 714

From Overfactoring to Structural Clarity: Applying Random Intercept Item Factor Analysis (RIIFA) to Improve Dimensionality Estimation

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The inclusion of negatively worded items in psychological scales often introduces wording effects—systematic response biases that distort factor structures and inflate dimensionality estimates, threatening structural validity. The random intercept item factor analysis (RIIFA) offers a promising strategy to isolate systematic variance due to item wording by incorporating a latent method factor that explicitly models individual differences in response style. This study empirically evaluates the effectiveness of RIIFA, using the Short Grit Scale (Grit-S), across two complementary studies. Study 1 ($N = 977$) compared standard dimensionality reduction techniques—Exploratory Graph Analysis (EGA) and Parallel Analysis (PA)—with their RIIFA-based counterparts (riEGA and riPA). Results showed that traditional methods overestimated the number of factors, identifying separate factors for positively and negatively worded items. In contrast, RIIFA-based techniques yielded unidimensional and more stable solutions, as confirmed by bootstrap analyses. Study 2 ($N = 496$) tested four confirmatory factor analysis (CFA) models (unidimensional, two-correlated factors, bifactor, and RIIFA-based CFA). The model including a random intercept factor (riCFA) provided the best balance between parsimony and fit (RMSEA = .048 [.022–.072]; CFI = .984; TLI = .974; SRMR = .027), with a satisfactory reliability ($\omega_H = .73$). Overall, findings validate the application of RIIFA for mitigating method variance in both exploratory and confirmatory frameworks, enhancing the interpretability and structural integrity of psychological constructs measured through mixed-worded scales.

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No

Health, Sport and Wellbeing / 690**Giochi e videogiochi ad alte richieste cognitive: motivazioni, correlati ed effetti****Author:** Stefano Triberti¹**Co-authors:** Leonarda Anna Vinci ¹; Donatella Ciarmoli ¹; Chiara Scuotto ¹¹ *Dipartimento di Psicologia e Scienze della Salute, Università Telematica Pegaso***Corresponding Author:** stefano.triberti@unipegaso.it

Negli ultimi decenni la psicologia dei videogiochi ha visto un ricco proliferare di ricerche. Tuttavia, alcune tematiche risultano relativamente sotto-studiate. Per esempio, tipicamente la ricerca si interessa dei videogiochi d'azione, probabilmente a motivo della loro associazione con tematiche di interesse come gli effetti dei videogiochi violenti e le condotte di abuso. Ciò non rappresenta necessariamente l'evoluzione dello scenario videoludico contemporaneo: per esempio, sulle piattaforme come Steam i prodotti associati a "mistero" e "puzzle" superano classici generi d'azione come "sparatutto" e "picchiaduro". La diffusione di giochi e videogiochi "ad alte richieste cognitive" ("high problem solving", HPS) si accompagna ad altri fenomeni sociali e mediatici come la diffusione delle escape room, la ricomparsa del genere whodunit al cinema, il ritorno in auge dei libri game. Sfidando la distinzione classica tra "casual" e "hard" gaming, i videogiocatori oggi apprezzano prodotti facili da apprendere e tuttavia sfidati in termini di osservazione, ragionamento, risoluzione di problemi e investigazione. Nostre ricerche preliminari hanno mostrato che il profilo motivazionale dei giocatori appassionati di giochi HPS è peculiare, non tanto pronò alla ricerca di "divertimento" o motivazione intrinseca (laddove i giochi HPS sono spesso frustranti), bensì a sfide che possano migliorare intelligenza, competenza, capacità cognitive, e di conseguenza autostima e autoefficacia cognitiva (identified regulation). Laddove giochi HPS iniziano a essere utilizzati anche in numerosi progetti di intervento (per esempio in ambito formativo), un obiettivo importante è investigare se e come l'attività frequente con tali giochi potenzia realmente capacità cognitive di alto livello, a partire dall'esperienza dei giocatori.

If you're submitting a symposium talk, what's the symposium title?:

Il ruolo dei videogiochi per la salute: aspetti innovativi e future direzioni

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No

Attention, Perception and Consciousness / 870**The Touch of Sight: Inter-Subject Correlation Unveils crossmodal Convergence in the human brain****Author:** Nicolo Castellani¹**Co-authors:** Francesca Simonelli ¹; Davide Bottari ¹; Jordi Manuella ²; Donato Liloia ³; Franco Cauda ³; Tommaso Costa ³; Sergio Duca ³; Emiliano Ricciardi ⁴; Giacomo Handjaras ¹; Francesca Garbarini ⁵¹ *IMT Lucca*² *Università degli Studi di Torino*³ *Università di Torino, Dipartimento di Psicologia*⁴ *Scuola IMT Alti Studi Lucca*⁵ *MANIBUS Lab, Department of Psychology, University of Turin, Italy*

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Feeling a touch is different from observing a touch. However, previous observations suggest shared neural representations between the two sensory modalities. To clarify this phenomenon, in this fMRI study, we employed inter-subject correlation (ISC) analysis, a measure of brain synchronization across individuals, between two groups of participants exposed either to a continuous passive tactile stimulation of their hands employing a brush, or to a naturalistic visual movie of an identical tactile stimulation.

ISC analysis was performed computing Pearson's correlation coefficient between the BOLD activity elicited in the Real-Touch and in the Visual-Touch subjects. Subsequently, in the significant ROIs, we tested the correlation's drop when introducing mismatched information related to lateralization and digitotopy. Statistical significance was assessed through a permutation test and FDR correction for multiple comparisons.

ISC between individuals exposed to Real-Touch or Visual-Touch isolated brain regions responding to both visual and tactile stimuli: a significant synchronization was found in several brain areas. Among them, significant results were found in S1 and S2 and in the middle temporal area. Subsequently, we found a significant reduction in ISC while introducing mismatching information.

Our results demonstrated a direct contribution of the somatosensory cortices in building a shared neural representation between real and observed touch, identifying a multimodal representation of the hands that is sensitive to bodily information in the human brain. This would open the way for future investigations of heteromodal remapping of visual input in somatosensory cortices, following permanent sensory deprivations, as in upper limbs agenesis or amputation.

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Attention, Perception and Consciousness / 785

The Impact of Verbal Conditioning and Visual Exposure on Body Perceived Position

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The perceived body location arises from the integration of multisensory inputs. However, whether top-down factors can modulate body position perception beyond multisensory integration remains unclear. Here, we investigated whether verbal conditioning could change the perceived body location and whether this effect depends on the presence of visual information (i.e., visual exposure to a virtual hand). Participants, immersed in virtual environment, completed four conditions where verbal information was manipulated: (i) Baseline, with no verbal instructions and no change in hand position; (ii) Placebo Displacement, where participants were told their hand would be displaced, although no shift occurred; (iii) Control Displacement, where participants were informed the hand would move and then return to its original position; (iv) Real Displacement, where participants were told of a displacement and the hand was actually shifted. In each condition, perceived hand position was assessed implicitly, using a body localization task (BLT), and explicitly using a Likert scale. In Experiment 1, participants had no visual feedback (black screen), while in Experiment 2, they observed a misaligned virtual hand before the tasks. We conducted two Bayesian ANOVAs to compare shifts in explicit (question scores) and implicit (BLT estimates) measures across Experiments and Conditions. Results showed that verbal manipulation influenced the explicit perceived position independently of visual exposure, as a shift was observed in the Placebo condition in both experiments.

Conversely, the implicit measure was affected only after the visual exposure, suggesting that verbal information is not sufficient alone to modify the implicit perceived position without additional sensory input.

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Emotions and Motivations 3 / 984

Elaborazione emotiva implicita ed esplicita con volti ibridi: un single case di una paziente con lesione capsulo-talamica destra

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Co-authors: Caterina Padulo²; Giulia Prete³; Antonio Leo⁴; Alessandra Franco⁴; Tatiana De Francesco⁴; Maria Rosaria Viva⁴; Luca Tommasi³; Giuliana Lucci⁵; Chiara Valeria Marinelli⁶

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In questo studio abbiamo indagato la relazione tra frequenze spaziali e percezione emotiva impiegando il paradigma dei volti ibridi congiuntamente con il paradigma tachistoscopico. Volti felici, neutri, tristi e arrabbiati sono stati presentati a un gruppo di controllo e a una paziente con danno capsulo-talamico destro. Gli stimoli erano 1) volti emotivi non filtrati che sollecitano un'elaborazione esplicita, 2) volti ibridi, creati sovrapponendo le basse frequenze spaziali (LSF: 1-6 cpi) dell'immagine emotiva alle alte frequenze spaziali (7-128 cpi) della stessa identità con espressione neutra, che richiedono un'elaborazione implicita. Il compito consisteva nel valutare l'amichevolezza dei volti tramite una scala Likert a 5 punti, un indice indiretto dell'elaborazione emotiva.

I risultati rivelano pattern simili tra la paziente e il gruppo di controllo nella valutazione implicita delle emozioni. Le LSF presenti nei volti ibridi, che presumibilmente attivano la via bassa sottocorticale del modello emotivo di LeDoux, potrebbero essere sufficienti per una stima affettiva di base (valenza positiva vs. negativa), capacità che la paziente sembra aver preservato. La mancata differenziazione tra le emozioni negative implicite suggerisce che tali distinzioni sottili necessitano di un'elaborazione corticale più dettagliata, non pienamente supportata dalla via sottocorticale.

Nella valutazione emotiva esplicita, mentre il gruppo di controllo mostra un pattern di risposta differenziato in base all'emozione, la paziente presenta deficit nella discriminazione delle emozioni negative. Questo dato concorda con l'osservazione precedente, indicando che la differenziazione tra le emozioni negative richiede probabilmente un'analisi corticale più approfondita, verosimilmente mediata dalla capsula interna che nella paziente è danneggiata.

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Health, Sport and Wellbeing / 602

THE EFFECTS OF IMMERSIVE VIRTUAL REALITY TRAINING ON PERCEPTUAL-COGNITIVE SKILLS IN HEALTHY ATHLETES: A SYSTEMATIC REVIEW ON SPORTS PERFORMANCE ENHANCEMENT

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Introduction

The aim of this review is to explore the effectiveness of virtual reality-based sports training in improving perceptual-cognitive skills in athletes, providing an overview of the targeted functions and their measures, and proposing a categorisation within cognitive domains.

Methods

A comprehensive literature search was conducted across PsycINFO, PubMed, Scopus, and Web of Science, following PRISMA 2020 guidelines. Studies were selected based on PICOS criteria, focusing on healthy athletes, virtual reality-based training, and perceptual-cognitive outcomes. Only quantitative intervention studies with inactive controls, alternative interventions, or within-subjects designs were included. Methodological quality was assessed using the Downs and Black checklist. Participant characteristics, sport, technology, training, perceptual-cognitive functions, outcome measures, and findings were extracted.

Results

A total of 5,976 records were identified from PsycINFO (n=240), PubMed (n=347), Scopus (n=3,367), and Web of Science (n=2,022). After removing 1,953 duplicates, 4,023 reports were screened by title/abstract; 3,975 were excluded, leaving 48 for full-text eligibility. Of these, 34 were excluded, resulting in 14 studies included. The most assessed domain was executive function (decision-making, inhibition, anticipation) (n=10), followed by attention (gaze control, visual search, selective attention) (n=3) and processing speed (reaction time) (n=2). Only 4 studies included cognitive measures: Stroop for inhibition, Vienna test for reaction time. Where reported, moderate to large effect sizes suggest that VR training is promising for enhancing perceptual-cognitive skills.

Conclusion

Heterogeneity in training frequency, duration, and outcome measures, along with study limitations, highlights the need for high-quality research to determine VR's effectiveness and its transfer to cognition by implementing cognitive tests.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Language, reading and music / 591

Da H1 a H0: La lingua straniera non riduce l'illusione di causalità

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Alcuni studi sull'illusione di causalità –un bias cognitivo che porta le persone a inferire erroneamente una relazione causale tra eventi non correlati –hanno suggerito che specifiche manipolazioni

indirette degli stimoli possano ridurre l'entità con la quale tale bias si manifesta. Tali manipolazioni includono, ad esempio, la disfluenza percettiva (Díaz-Lago & Matute, 2019a) e l'impiego di una lingua straniera durante la presentazione del compito utilizzato per elicitare l'illusione (effetto di lingua straniera; Díaz-Lago & Matute, 2019b).

Alla luce dell'impossibilità di replicare i risultati originali circa l'effetto mitigatore della disfluenza percettiva sull'illusione di causalità (Dalla Bona & Vicovaro, 2024), il presente studio si è concentrato sull'effetto della lingua straniera. In particolare, abbiamo indagato non solo l'efficacia di tale manipolazione, ma anche le possibili ragioni del potenziale effetto, come la riduzione del coinvolgimento emotivo nel compito dovuta all'utilizzo della lingua straniera. Lo studio ha coinvolto un totale di 220 partecipanti italiani, suddivisi in due gruppi: uno ha completato il compito di elicitazione dell'illusione in lingua inglese ($n = 110$), l'altro in italiano ($n = 110$). La numerosità campionaria è stata determinata a priori utilizzando una Bayes Factor Design Analysis. Lo studio è stato preregistrato (https://osf.io/hvgkx/?view_only=7098178875224cf3b0b6890b209432ea).

I risultati non hanno evidenziato alcuna riduzione significativa dell'illusione di causalità nel gruppo che ha svolto il compito in lingua straniera rispetto a quello in lingua nativa, confermando che gli effetti indiretti mirati alla riduzione dell'illusione di causalità non risultano replicabili in modo affidabile. Tali effetti dovrebbero essere considerati nulli, o quantomeno estremamente deboli e inconsistenti.

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Methodology 2 / 895

New Measures of Reliability in Knowledge Space Theory

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Differently from other measurement approaches, such as classical test theory and item response theory, the knowledge space theory (KST) framework has long lacked an overall index for measuring reliability. Recent literature has proposed the introduction of two indices, both grounded in an information-theoretic framework. In this research, we further investigate reliability in KST and introduce two new key measures: the expected accuracy rate and the expected discrepancy. The accuracy rate quantifies the probability that the estimated knowledge state (obtained through an assessment) matches the true state, while the expected discrepancy measures the average deviation when misclassification occurs. These two indices are immediately interpretable as a probability and a distance, respectively, thus offering clear insight into the reliability of the assessment.

In this talk, we briefly discuss these indices from a theoretical perspective and present two simulation studies aimed at evaluating their performance under different conditions. The main results of the simulations reveal that smaller structures exhibit consistent accuracy across varying error levels, while larger structures show increasing discrepancies as error rates rise. Furthermore, accuracy improves with a greater number of items in larger structures, mitigating the impact of errors. Importantly, the results also highlight that, when misclassification occurs, the estimated state is generally very close to the true one. This finding is particularly important, as it indicates that the effect of misclassifications in the assessment is almost negligible. In summary, these new indices represent a significant improvement in KST, providing the framework with a robust method for estimating assessment reliability.

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Methodology 2 / 681

Presenting the SMILE Visual (SMILE-V): Preliminary validity evidence of a self-report instrument to measure meaning in life with visual stimuli

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The concept of meaning in life (MIL) is inherently complex, subjective, and thus challenging to measure, despite its core relevance in the promotion of individual well-being and flourishing. Self-measure tools based on verbal items (e.g., SMILE, Zambelli & Tagliabue, 2024) are traditionally used to measure self-perception of life meaningfulness, however, they face well-documented limitations, including social desirability bias and inaccessibility for individuals with limited linguistic competence (King & Hicks, 2021). The SMILE Visual is a self-report measure which operationalizes the basic components of meaning in life (presence and search for meaning) through images. The development of the SMILE Visual followed a rigorous process. Twelve professional artists with different background (painters, designers, architects) were involved in three workshops with the aim of identifying key technical characteristics (e.g., composition, color, lighting) required for images to operationalize the MIL construct as defined by well-known theoretical definitions. Based on these insights, a set of images was created using AI tools (MidJourney and DALL·E) to represent each MIL dimension. The adequacy of images as valid operationalizations of both theoretical and technical definitions of the MIL dimensions was evaluated by expert researchers and professionals. Construct validity was further explored by conducting cognitive interviews with a gender-balanced convenience sample of adults who evaluated the comprehensibility and applicability of the SMILE Visual. This project marks a first step toward the adoption of visual stimuli to develop psychological measures with fair and inclusive methods. Opportunities and challenges of the development and validation of visual measures are discussed.

If you're submitting a symposium talk, what's the symposium title?:

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Attention, Perception and Consciousness / 655

Oscillatory Signatures of Prior Learning: Dissociable Roles of Theta and Alpha Oscillations in Strategy Acquisition and Exploitation

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Introduction

Recent years have witnessed growing interest in the cognitive neuroscience of prior knowledge implementation in perceptual decision-making. Previous studies emphasized the role of posterior alpha rhythms in exploiting explicit priors, showing cue-related amplitude modulations. Yet, the oscillatory mechanisms underlying prior learning remain poorly understood. In this study, we investigated the temporal dynamics of prior acquisition and exploitation, predicting that posterior alpha oscillations would underpin prior use, while mid-frontal theta would reflect the learning decision strategies.

Methods

Participants (n=78) performed a simple detection task with concurrent EEG recording. Before each stimulus, a contextual cue signaled the optimal strategy (liberal or conservative). Feedback, linked to the initial cue, guided participants in learning the appropriate strategy. This design allowed us to examine how contextual priors shaped both behavior and oscillatory activity.

Results

Behaviorally, participants adjusted their response criterion based on feedback, although strong inter-individual differences emerged. A subgroup of “good-learners” successfully optimized their behavior, while “bad-learners” failed to leverage contextual information. Neural analyses revealed distinct oscillatory patterns between groups: good-learners exhibited increased mid-frontal theta synchronization during early learning phases and posterior alpha modulation in later stages once the associations had been internalized.

Conclusions

Our findings demonstrate that learned priors critically shape decision strategies and reveal the oscillatory dynamics underpinning this process. Specifically, mid-frontal theta supports model acquisition through feedback, while posterior alpha amplitude serves as a marker for the exploitation of learned priors.

If you're submitting a symposium talk, what's the symposium title?:

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Emotions and Motivations 3 / 991

Specific Learning Disabilities and Associated Emotional-Motivational Profiles: A Study in Italian University Students

Author: Marika Iaia¹

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In this study, we analyzed the emotional and motivational aspects characterizing the profile of university students with Specific Learning Disorders (SLDs). We assessed 61 university students, 32 with SLD (age=23.6) and 29 in the control group (age=23.00). The results highlighted that individuals with SLDs exhibit higher levels of anxiety and depression and lower resilience compared to the control group. The Multidimensional Perfectionism Scale –Short Form, which explores perfectionism, did not reveal differences between the groups. Conversely, lower scores emerged in SLD students for the intrinsic motivation sub-scales of the Academic Motivation Scale. This indicates less engagement in studying out of personal cognitive curiosity. The Self-Regulated Knowledge Scale –University, which measures various cognitive strategies, showed significantly lower scores in the SLD group for knowledge linking, knowledge training, and knowledge critique. This suggests a lower frequency with which SLD students attempt to connect new knowledge with what they already possess, apply their knowledge, ask questions, and critically analyze what they have learned. Therefore, psychological and motivational consequences are evident in this population and can impact well-being and quality of life.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Health, Sport and Wellbeing / 901

Telemedicine Acceptance in Rural Settings: A Systematic Review of Definitions, Methods, and Measurement Practices

Authors: Marco Lezcano¹; Martina Vacondio²; Luca Laezza¹; Margherita Pasini¹; Maria Gabriella Landuzzi¹

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Technological advances, particularly in e-health and telemedicine, have significantly influenced the evolution of healthcare services, especially after COVID-19. Telemedicine, according to the WHO, is defined as “the delivery of health services where distance is a critical factor, or would be using appropriate technologies, by all healthcare professionals using information and communication technologies in the exchange of valid information for diagnosis of patients, treatment, and prevention of disease and injuries”. Telemedicine is gaining popularity by extending the available services from urban centers to rural areas and technology acceptance frameworks have been widely used to assess telemedicine acceptance level. However, the heterogeneity of assessments leads to fragmentation, which limits methodological rigor and generalizable results.

The current systematic review aims to answer three questions: (1) How is “acceptance” defined and measured in telemedicine? (2) What methods are most used to assess the acceptability of telemedicine delivered in rural areas? (3) To what extent do rural health care practitioners and patients accept telemedicine?

The review incorporated a final sample of 104 studies published between 2018 and 2024 that show a balance between quantitative, qualitative, and mixed methods approaches. Unfortunately, the same can't be said for the number of studies that referenced a theoretical framework when evaluating acceptance (29%) and studies that used standardized research tools (36%). The combination of these results with the fact that most of the authors (78%) claimed to have measured high levels of acceptance, calls for a critical look into the literature and the generalizability of published results.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Language, reading and music / 592

Exploring ChatGPT's Communication Behaviour in Healthcare Interactions: a Psycholinguistic Perspective

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Objectives: Conversational artificial agents such as ChatGPT are commonly used by people seeking healthcare information. This study investigates whether ChatGPT exhibits distinct communicative behaviors in healthcare settings based on the nature of the disorder (medical or psychological) and the user's communication style (neutral vs. expressing concern).

Method: Queries were conducted with ChatGPT to gather information on the diagnosis and treatment of two conditions (arthritis and anxiety) using different styles (neutral vs. expressing concern). ChatGPT's responses were analyzed using Linguistic Inquiry and Word Count (LIWC) to identify linguistic markers of the agent's adjustment to different inquiries and interaction modes. Statistical analyses, including repeated measures ANOVA and k-means cluster analysis, identified patterns in ChatGPT's responses.

Results: ChatGPT used more engaging language in treatment contexts and psychological inquiries. It exhibited more analytical thinking in neutral contexts while demonstrating higher levels of empathy in psychological conditions and when the user expressed concern. Wellness-related language was more prevalent in psychological and treatment contexts, whereas illness-related language was more common in diagnostic interactions for physical conditions. Cluster analysis revealed two distinct patterns: high empathy and engagement in psychological/expressing-concern scenarios, and lower empathy and engagement in neutral/physical disease contexts.

Conclusions: These findings suggest that ChatGPT's responses vary according to disorder type and interaction context, potentially improving its effectiveness in patient engagement.

Practice implications: Through context and user-concern language adaptation, ChatGPT can enhance patient engagement.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Emotions and Motivations 3 / 661

An early phase advantage in dynamic emotion recognition for gifted children? Evidence from an Italian sample.

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Literature suggests that gifted children outperform non-gifted peers in information processing tasks (Duan et al., 2013). Also, research shows that facial emotion recognition accuracy is affected by expression intensity (Jenness et al., 2015; Montirosso et al., 2010), which can be depicted as different amounts of information available for the observer during emotion recognition. To test if an information processing advantage for gifted children also exists in the emotional domain, in this study we compared gifted children's and a control peer group's performance on dynamic facial emotion recognition as expressed at different intensity levels (40%-100%). Participants (7-11 years old, N = 80, 45% female) completed the emotional recognition task (Kessels et al., 2014) involving six basic emotions (anger, disgust, fear, happiness, sadness and surprise) presented as morphed videoclips, that have to be labelled using a six-alternative forced choice response with no time restriction. A strong positive correlation between age and general accuracy was found within the whole sample, confirming that the ability develops progressively as children mature. Independent sample t-test results indicated that the gifted group shows significantly higher accuracy on disgust and surprise recognition, compared to the control group. Interaction effect group by intensity level was found, with gifted children reporting significantly better performance at low intensity (40%-60%) compared to controls, indicating that their advantage in information processing may be more detectable in the

early phase of emotion expression, despite emotion's type. Future studies are needed to clarify the nature of these results.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Methodology 2 / 725

Metodi partecipativi: ibridazione metodologica per la ricerca tecnoscientifica inclusiva

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Introduzione.

I metodi partecipativi stanno trasformando la ricerca applicata, promuovendo una collaborazione attiva tra ricercatori e stakeholder, in particolare nei contesti di innovazione tecnologica orientata a soluzioni Human-Centered. Tuttavia, la dicotomia tra soggetti "esperti" e "non esperti" rimane ancora irrisolta, limitando il pieno potenziale inclusivo di tali pratiche (Crabu & Magaudo, 2018).

Obiettivi e Metodi.

Questo studio esplora le condizioni epistemologiche e operative delle pratiche partecipative nella ricerca e innovazione, costituendo la fase preliminare di un progetto più ampio che prevede interventi sperimentali futuri. L'analisi si è concentrata su proposte di progetti europei, coordinate tra il 2017 e il 2024 da un centro italiano di ricerca tecnologica, con particolare attenzione agli approcci metodologici adottati, alle strategie di inclusione e ai valori dichiarati. È stata impiegata una metodologia qualitativa, analizzando i documenti d'archivio tramite l'analisi del contenuto.

Risultati.

I risultati evidenziano l'uso diffuso della co-progettazione, spesso riferita allo Human-Centered Design, a riprova della riconosciuta rilevanza del processo partecipativo per l'innovazione. Tuttavia, la maggior parte delle metodologie risultano technology-driven, e il co-design è frequentemente impiegato più come strumento consultivo che come processo realmente partecipativo. Lo studio ha permesso di osservare come la mancanza di una distribuzione equa del potere e la scarsa attenzione alle dinamiche di coinvolgimento limitano il potenziale trasformativo di queste metodologie.

Conclusioni.

L'analisi di questi aspetti contribuisce a una progettazione tecnologica autenticamente inclusiva e partecipativa. Analogamente, l'ibridazione di metodologie di design nella strutturazione della ricerca sperimentale può dischiudere nuovi scenari di "Giustizia epistemica", riconoscendo il valore delle conoscenze esperienziali.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Health, Sport and Wellbeing / 627**Qualità di vita fisica e mentale post-COVID-19: uno studio su profili latenti e fattori predittivi****Author:** Marco Viola¹**Co-author:** Rosalba Rosato²¹ *UniTO - UPF - ISGlobal*² *UniTO***Corresponding Author:** m.viola@unito.it

Il presente studio si propone di esplorare la presenza di profili distinti in termini di Qualità di Vita (QoL), ansia, depressione, stress, sonno e fatica in un campione di pazienti ricoverati per COVID-19 presso l'Ospedale Molinette di Torino tra marzo 2020 e giugno 2022. Inoltre, la ricerca mira a identificare quali variabili cliniche al momento del ricovero (indicatori di gravità dell'infezione da COVID-19) possano determinare l'appartenenza ai profili individuati, ovvero spiegare eventuali differenze nei livelli di QoL e nei sintomi psicologici/psicosomatici a lungo termine.

I pazienti hanno compilato un questionario su QoL e sintomi psicologici/psicosomatici tra giugno 2022 e giugno 2023; per ciascun soggetto sono disponibili anche i dati clinici al momento del ricovero. È stata condotta un'Analisi dei Profili Latenti (LPA), seguita da una regressione logistica multinomiale per esaminare come alcuni indicatori di gravità del COVID-19 influenzassero la probabilità di appartenenza ai profili individuati.

Il campione di 601 pazienti presenta un'età media di 61 anni, il 38% è di sesso femminile e il 75% ha avuto la polmonite. La LPA ha individuato tre profili psicofisici: nella norma (n=289), fragili (n=229) e critici (n=83). Né il ricovero in terapia intensiva né la polmonite risultano significativamente associati a condizioni psicofisiche più critiche. I principali predittori dell'appartenenza ai profili caratterizzati da condizioni psicofisiche più complesse risultano essere la presenza di comorbidità e l'alterazione dei parametri clinici relativi allo stato fisico generale (frequenza respiratoria, cardiaca, temperatura corporea, saturazione...). Il genere femminile è associato ad una maggiore probabilità di appartenenza ai profili più critici.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Language, reading and music / 615****Adapting predictions: Investigating the role of speech adaptation in predictive processing using Temporal Response Function****Authors:** Marco Sala¹; Giorgio Piazza¹; Rebecca Guerrini¹; Francesca Peressotti¹¹ *Dipartimento di Psicologia dello Sviluppo e della Socializzazione, Università degli Studi di Padova***Corresponding Author:** marco.sala.2@phd.unipd.it

Introduction: Understanding speech in everyday life often requires adapting to unfamiliar speakers, a process known as perceptual adaptation. This adaptation is not effortless and likely draws on cognitive resources that are also needed for other aspects of language comprehension. Prominent models of language comprehension assume that listeners predict linguistic information at various levels (e.g., phonological, lexical, semantic). However, it remains unclear how predictive processes operate under heightened cognitive demands. This study explores how talker variability affects the brain's ability to generate predictions during natural speech comprehension.

Methods: Thirty native Italian speakers listened to two stories while EEG data were recorded. In the single-talker condition, one speaker narrated the entire story; in the multi-talker condition, different speakers narrated different sections of the story. Temporal Response Function analysis was used to

map the relationship between stimulus features and neural responses over time. We analyzed the encoding of speech envelope, phonemic entropy (i.e., the uncertainty of the next phoneme), and semantic surprisal (i.e., the unpredictability of lexical elements) over time.

Results: Neural response to speech envelope exhibited a greater N1-P2 TRF peak-to-peak amplitude in the multi-talker condition compared to the single-talker condition. Phonemic entropy elicited earlier and stronger responses in the multi-talker condition, while no differences between conditions emerged for semantic surprisal.

Conclusions: These findings suggest that speech adaptation involves increased allocation of cognitive resources and greater reliance on acoustic cues, as reflected in the N1-P2 results. Listeners are more sensitive to phonological uncertainty under increased talker variability, while lexical predictions appear unaffected.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Attention, Perception and Consciousness / 612

Quando l'immagine rigenera: il ruolo degli elementi strutturali basici della scena (BSE) nei paesaggi naturali

Author: Valentina Mariani¹

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Lo studio indaga la relazione tra alcuni elementi strutturali basici di un'immagine (BSE) e il senso di rigeneratività (RIG) elicitata dalla visione di paesaggi naturali. L'Attention Restoration Theory (ART) postula che i paesaggi naturali possiedano caratteristiche che catturano automaticamente l'attenzione visiva, favorendo l'elaborazione dell'immagine e generando la percezione di RIG. Il Scene Centered Approach (SCA) suggerisce che, nel processo iniziale di codifica di un'immagine, alcune BSE forniscano indizi fondamentali su estensione, profondità e complessità della scena. Si ipotizza, quindi, che le BSE siano predittori di RIG.

Per testare l'ipotesi sono state selezionate 12 immagini di paesaggi naturali. Il valore di 8 BSE tratte dal SCA (visibilità e altezza dell'orizzonte, prospettiva lineare e aerea, gradiente di tessitura, chiaroscuro, simmetria, collinearità) è stato stimato, da 21 soggetti, tramite l'utilizzo del metodo dell'ordine di rango. Le stesse immagini sono state valutate in termini di RIG da 102 partecipanti utilizzando la Perceived Restorativeness Scale (11 item su scala Likert a 7 punti).

L'analisi di regressione lineare indica che il modello secondo cui le BSE predicono RIG è statisticamente significativo, $F(8, 1215) = 44.4$, $p < .001$, $R^2 = 0.226$. RIG è predetta da: chiaroscuro ($F = 165.7$, $p < .001$), prospettiva aerea ($F = 160.7$, $p < .001$), prospettiva lineare ($F = 67.7$, $p < .001$), visibilità dell'orizzonte ($F = 36.5$, $p < .001$), altezza dell'orizzonte ($F = 18.2$, $p < .001$) e simmetria ($F = 4.48$, $p = .034$). Gradiente di tessitura e collinearità non risultano predittori significativi di RIG ($p = ns$).

Saranno discusse le implicazioni teoriche e pratiche dei risultati all'interno della cornice teorica dell'Attention Restoration Theory.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Methodology 2 / 842

Robust approaches in threat perception and vulnerability assessment for cyber social security

Author: Mario Angelelli¹

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As digital ecosystems become increasingly interconnected, cyber-risk assessment is no longer solely a technical matter. It now encompasses human factors, social dynamics, and individual perceptions that shape user behaviour and influence decision-making in the context of cyber social security. The diffusion of cyber-physical systems has intensified human–digital interactions, exposing users to emerging threats such as misinformation, information overload, and social engineering. These developments challenge traditional models of risk perception and call for approaches that explicitly account for subjective uncertainty and decision-making under ambiguity.

This contribution introduces a methodological framework for assessing perceived cyber-risk, focusing on how users prioritise vulnerabilities in complex and uncertain digital environments. Leveraging non-parametric techniques, we explore the construction of composite indicators that capture uncertainty in prioritisation processes and examine their impact on qualitative grading responses. To address ambiguity and partial knowledge—including unknown vulnerabilities (e.g., zero-days)—we propose a prediction accuracy measure tailored for incomplete information settings, a condition common in real-world cyber threat perception.

The framework is evaluated using both simulated and real-world datasets that reflect cybersecurity scenarios where contextual variables and user judgments play a critical role. Results highlight how different models and accuracy metrics perform under varying threat assessment strategies, offering insights into the cognitive and behavioural dimensions of cyber-risk perception. By providing interpretable and flexible tools to support decision-making under uncertainty, this study paves the way for future analyses on the processes underlying individuals and organisations assessment and response to cyber-threats in digital environments.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Emotions and Motivations 3 / 668

Social support regulates vigilance to threat: Evidence from startle reactivity during emotional stress induction

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The Social Baseline Theory (SBT) suggests that dealing with an uncertain and threatening environment in isolation comes with higher cost than doing so with social support, as the human brain and body evolved to operate optimally in a social environment. SBT identifies two mechanisms, load sharing and risk distribution, suggesting that when a threat arises in the environment, the load as well as the effort to deal with it can be distributed among members of a social group, optimizing the

metabolic and behavioral resources invested by individuals.

In this research we tested this model in an ecological setting, exposing participants (N = 70) to a stress induction task (TSST) and varying their access to social support. We recruited three groups of participants that performed the task together with their Partner, together with a Stranger, or Alone. During the task we collected participants' startle reactivity, a sensitive index of allocation of attentional resources as well as emotional state, elicited by randomly presenting a series of noise bursts during the task.

The analysis revealed that startle reactivity is inhibited during the task in all groups, indexing that dealing with the stressor saturates participants' resource capacity. Additionally, we found that this resource saturation is larger in the Alone group compared to the other two social groups.

This finding provides support for the SBT, showing how startle dynamically tracks the load sharing process by which proximity with social resources optimize the physiological as well as cognitive regulation of behavior in a threatening environment.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Language, reading and music / 628

Quando la lingua straniera non basta per ridurre il bias implicito di genere

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L'utilizzo di una lingua straniera (LS) riduce l'emotività e incrementa i processi deliberativi rispetto alla lingua nativa (LN), favorendo decisioni e valutazioni meno influenzate da bias cognitivi (*Foreign Language Effect*, FLE, Keysar et al, 2012). La ricerca indaga se la LS riduce stereotipi impliciti di genere nel mercato del lavoro (*gender-career bias*).

Tre esperimenti sono stati condotti: Esp.1, Implicit-Association test (IAT) (N=80); Esp.2, Semantic Priming (preregistrato, N=64); Esp.3., Old-New paradigm (preregistrato, N=52), con una metà dei partecipanti che svolgeva il compito in Italiano (LN) e l'altra metà in Inglese (LS). Nomi propri (Esp.1) e volti codificabili come maschili o femminili (Esp.2 e 3) sono stati associati a nomi stereotipicamente congruenti (donna-famiglia/uomo-lavoro) o incongruenti (donna-lavoro/uomo-famiglia) con il *gender-career bias*. Tempi di risposta e accuratezza sono stati registrati.

In tutti e tre gli esperimenti si osserva un effetto di congruenza. I partecipanti erano più veloci e accurati nella condizione in cui nomi propri (Esp.1) e volti (Esp.2 e 3) erano associati a un nome congruente con il *gender-career bias*. Inoltre, risposte più lente sono state osservate nel gruppo LS (effetto di lingua). Tuttavia, l'interazione tra lingua e congruenza non è risultata significativa in nessuno dei tre esperimenti.

In contrapposizione all'ipotesi del FLE, i risultati non evidenziano una riduzione dell'*implicit gender-career bias* in una LS rispetto a una LN. I compiti di *implicit bias* testati indagano processi automatici e presentano una massiccia ripetizione di stimoli. Futuri lavori dovrebbero indagare l'influenza del contesto linguistico (FLE) in processi decisionali più deliberativi (*explicit bias*).

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Health, Sport and Wellbeing / 717

UNDERSTANDING LONELINESS THROUGH PERSONALITY: IMPLICATIONS FOR SOCIAL AND PSYCHOLOGICAL WELL-BEING

Authors: Ester Cornacchia^{None}; Valerio Manippa^{None}; Giorgia Francesca Scaramuzzi¹; Aurora Bonvino²; Daphne Gasparre³; Davide Rivolta⁴; Paolo Taurisano⁴

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Human beings are inherently social creatures whose psychological and physical well-being depends on the quality of their relationships. When these relationships are impaired, loneliness, characterized by a perceived discrepancy between desired and actual social ties, can emerge. Loneliness is a subjective and distressing feeling, whereas social isolation refers to the objective lack of relationships. Previous research has shown that both loneliness and social support are associated with personality traits, particularly higher neuroticism and lower extraversion.

This study explores the impact of personality traits on loneliness and social support. A sample of 226 participants completed the HEXACO-60, PID-5-SF, the UCLA Loneliness Scale and the Lubben Social Network Scale (LSNS). Linear regression analyses were conducted to assess predictive relationships.

The analysis of the impact of HEXACO personality dimensions on loneliness (UCLA score) (adjusted $R^2 = 0.442$; $p < .001$) shows a positive effect of Emotionality ($p < .001$) –i.e. vulnerability to emotional distress –and a negative effect of Extraversion ($p < .001$). The same dimensions also predicted social support (LSNS score). Similarly, the pathological personality dimensions (PID score) (adjusted $R^2 = 0.439$) of Negative Affectivity ($p = .001$), Detachment ($p < .001$), and Psychoticism ($p = .005$) appear to positively influence loneliness. In contrast, social support was significantly associated only with Detachment.

These findings suggest that individuals with greater emotional vulnerability and maladaptive traits are more likely to experience loneliness and social isolation. Further research should clarify the mediating mechanisms involved and inform interventions targeting loneliness and associated psychopathological risks.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Attention, Perception and Consciousness / 756

Charting plastic dynamics triggered by progressive vision loss: electrophysiological evidence from SSVEPs and TMS-EEG

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Inherited Retinal Dystrophies (IRDs) are a group of genetically inherited disorders marked by the gradual degeneration of photoreceptors and leading to progressive vision loss. As retinal degeneration advances, compensatory changes may emerge across sensory, neural, motor, and psychological

domains. The extent to which IRDs shape cortical responsiveness and the mechanisms underlying adaptive coping remain only partially understood. This study aims to investigate the adaptive mechanisms associated with IRDs through a multimodal approach.

A group of patients diagnosed with IRDs underwent a series of neurophysiological assessments through electroencephalography (EEG) and its combination with transcranial magnetic stimulation (TMS). Residual visual responsiveness was evaluated using steady-state visual evoked potentials (SSVEPs) induced by 12 Hz flickering high-contrast checkerboard stimuli. TMS-evoked potentials (TEPs), elicited by stimulating the left or right visual cortex while recording EEG, were used to assess cortical excitability and reactivity, with particular attention to both local responses and the propagation of activity across functionally connected brain networks.

Preliminary results revealed preserved but attenuated SSVEP responses in IRD patients, with altered scalp topographies, suggesting diminished signal strength and reduced spatial specificity. TMS-EEG data indicated altered evoked activity patterns following visual cortex stimulation, pointing to reorganization within the affected cortical circuits.

These findings suggest that the employed techniques are sensitive to residual cortical activity in visual areas, which appear to remain partially responsive despite peripheral degeneration and may be involved in compensatory neural dynamics. The observed plasticity highlights the brain's capacity to adapt to sensory loss and underscores the importance of integrating neurophysiological assessments.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Language, reading and music / 721

Dyslexia in Higher Education: Specific and Global Components of the Reading Profile

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More and more children with dyslexia progress in their school curriculum to college, raising interest in examining the characteristics of reading disorders in adulthood. In the present study, we investigated the reading abilities of Italian college students with dyslexia, examining vocal reaction times (RTs) in reading single words. We presented the entire set of words from the Varless database, considering several psycholinguistic variables, such as length, contextual rules, N-size, word frequency, and stress. Given the baseline differences between controls and adults with dyslexia, we carried out analyses of both raw RTs and z-transformed data to control for the presence of the over-additivity effect. We examined 23 adults with dyslexia and 30 controls. Results indicated a general slowing compared to control readers. This slowing was well described by a single global factor, in keeping with the difference engine model's (DEM) predictions. Students with dyslexia were more sensitive to the influence of length and frequency; however, these interactions vanished in the z-transformed analyses, indicating that they were due to over-additivity. A similar pattern was present in the case of stress assignment, one form of orthographic inconsistency in Italian. There were subtle differences between the two groups of subjects for a few psycholinguistic parameters. Despite prolonged school attendance, college students with dyslexia still show marked RTs slowing across various word stimuli. A global factor accounted for most (although not all) of the results when using analyses capable of controlling for over-additivity.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Emotions and Motivations 3 / 924

Intelligenza emotiva: un contributo italiano nel dibattito sullo studio delle proprietà psicometriche della scala EIS

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Il costrutto di Intelligenza Emotiva è dibattuto e controverso a partire dalla sua definizione e diversi studi indagano in maniera critica la multidimensionalità che ha portato a soluzioni fattoriali diverse (tre o quattro fattori). In letteratura, inoltre, limitati sono gli studi sugli adulti nel contesto nazionale. Il presente studio indaga la struttura fattoriale e le proprietà psicometriche dell'Intelligence Emotional Scale (EIS) a partire dalle considerazioni teoriche precedenti in adulti italiani.

Hanno partecipato allo studio 761 soggetti (18-84 anni, $M=38,7$; $DS_{EIS}=17,9$; $49,0\%F$) randomizzati in due gruppi (380 per l'analisi fattoriale esplorativa-EFA, 381 per l'analisi fattoriale confermativa-CFA). Sono state somministrate EIS, Toronto Alexithymia Scale (TAS), Symptom Checklist-90 (SCL90), Big Five inventory (BFI10). La somministrazione è avvenuta online previo consenso informato.

Dall'AFE è risultata una struttura a 5 fattori: "Riconoscimento non verbale delle emozioni" ($\omega=0,79$); "Gestione e regolazione delle proprie emozioni" ($\omega=0,76$); "Attenzione all'altro" ($\omega=0,73$), "Cambiamento emotivo, creatività e innovazione" ($\omega=0,67$), "Riconoscimento e ampliamento delle emozioni positive" ($\omega=0,66$). I risultati sono stati coerentemente supportati dai risultati della CFA. I fattori sono risultati correlati significativamente con il punteggio totale ottenuto nella TAS e con le sue sottoscale, con i cinque fattori del Big Five e con le 10 sottoscale della SCL90.

Da quanto emerso, a conferma della letteratura, l'intelligenza emotiva misurata con l'EIS, è da intendersi come costrutto multidimensionale con un'attenzione particolare agli aspetti non verbali anche in relazione alla personalità. Questo contributo si propone come innovativo nell'ambito dello studio dell'Intelligenza Emotiva con un diverso accento sul modello fattoriale e teorico.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Health, Sport and Wellbeing / 766

Aumento di peso e immagine corporea nella schizofrenia: revisione sistematica e meta-sintesi della letteratura

Author: Sofia Francesca Aprile¹

Co-authors: Alessandro Rodolico ²; Antonio Di Francesco ³; Sabrina Castellano ¹; Maria Salvina Signorelli ³; Filippo Caraci ⁴

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Gli antipsicotici rappresentano il trattamento d'elezione per i disturbi dello spettro schizofrenico. Tuttavia, essi risultano associati ad importanti effetti collaterali tra cui l'aumento di peso, che determina ripercussioni fisiologiche e psicologiche notevoli sulla vita dei pazienti. Questo studio ha l'obiettivo di esplorare l'aumento di peso indotto da antipsicotici secondo una prospettiva patient-reported, al fine di indagare come l'immagine di un corpo che cambia si interseca con la psicopatologia. È stata condotta una revisione sistematica (ENTREQ checklist) di studi qualitativi attraverso i database PubMed, Scopus e PsycInfo. Sono stati inclusi otto studi con un campione totale di 139 soggetti. La sintesi tematica ha evidenziato quattro temi principali: (1) dimensioni emotive e psicologiche, (2) gestione e superamento delle sfide legate al peso, (3) ruolo del sistema sanitario, (4) comprensione dell'aumento di peso. I pazienti hanno descritto l'aumento di peso come un'esperienza profondamente stressante, spesso associata a un'immagine corporea negativa, riduzione dell'autostima e sentimenti di vergogna, inadeguatezza e disgusto verso sé stessi. Molti hanno riferito che l'aumento di peso ha influito negativamente sull'aderenza terapeutica e sulla fiducia nei confronti dei clinici. È inoltre emersa una percezione diffusa di mancanza di supporto e ascolto da parte dei professionisti sanitari. I partecipanti hanno evidenziato l'importanza di una corretta psicoeducazione e di un coinvolgimento attivo nelle decisioni terapeutiche. I risultati suggeriscono che l'aumento di peso rappresenta un effetto collaterale con importanti ripercussioni sulla salute psichica, e va affrontato dunque con maggiore attenzione nella pratica clinica.

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Attention, Perception and Consciousness / 798

Dynamic Interplay between Visual Attention and Motor Control in FPS Gaming

Authors: Dalila Sciarra^{None}; Moreno Ignazio Coco¹

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Eye-hand coordination is critical in many daily tasks and essential in sporting contexts, directly relating to performance outcomes. This topic has been central in research on traditional sports (i.e., tennis, basketball). This study investigates the learning patterns underlying eye-hand coordination and performance in videogames, a yet understudied but rapidly emerging discipline, focusing on the interplay of different cognitive functions.

Twenty individuals with different levels of expertise played eight different first-person shooter video games (shooting fixed/moving targets, decision-making, memory tasks, etc.) drawn from the "Aimlab" platform, by tracking both eye and hand movements. Each game was repeated four times (4 repetitions x 8 games, 1 hour of gameplay).

A linear mixed-effects models with a by-subject random effect was used to predicted the duration of the final fixation before clicking on a target as a function of performance metrics (shot frequency, hit/miss rates, reaction time) across the four repetitions.

Overall, performance linearly improved across sessions in all games. Importantly, each game exhibited distinct patterns of overt attention time-locked-to-hand responses. Some showed a progressively linear increase/decrease in fixation duration over sessions. In some others, fixation duration displayed a non-linear dynamic, reaching an individual-specific maximum threshold that optimised performance.

To our knowledge, this study is the first to demonstrate that the duration of target fixation before a hand response doesn't linearly predict performance in these types of videogames. This finding contrasts with the "quiet eye" concept often described in traditional sports, where a linear relationship between overt attention and performance is typically observed.

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Methodology 2 / 850

When less is (sometimes) more. Evaluating the effect of trial number in classical experimental psychology paradigms.

Authors: Filippo Gambarota¹; Giovanni Bruno¹; Roberta Sellaro¹; Simone Cutini¹

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When planning an experiment, the number of participants is typically based on the desired statistical power or precision. For intrinsically noisy measures such as reaction times, neural or physiological indexes, the number of trials per participant can also be increased to enhance statistical power. However, the actual benefit of adding more trials has not been systematically evaluated. Longer experiments may introduce fatigue, reduce measurement precision, or cause adaptation and ceiling effects, potentially hindering statistical Power. Using three classic psychological paradigms (Simon effect, SNARC effect, Task Switching), we descriptively examine how the number of trials affects effect size, statistical power, and parameter estimates. Through a cumulative exploratory modelling approach, we show that increasing the number of trials can sometimes have no benefit—and may even be detrimental, reducing effect size and thus lowering power. We propose benchmarks for balancing the number of trials against effect size and precision. Even for other paradigms, we recommend evaluating experiment length alongside the usual power analysis, accounting for potential side effects.

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Language, reading and music / 654

Una versione per bambini del Barcelona Music Reward Questionnaire

Author: Francesca Cantoni¹

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La percezione ritmica è importante sia nella musica che nel linguaggio, e i bambini con disturbi del neurosviluppo mostrano pattern ritmici atipici. Tuttavia, gli strumenti esistenti per valutare le abilità ritmiche sono spesso pensati per adulti, rendendo necessario sviluppare test più adatti ai bambini. Abbiamo ideato una versione per bambini del Beat Alignment Test (BAT), test di riferimento per la valutazione della percezione del beat, utilizzando estratti musicali in stile pop con una gran cassa

che suona la pulsazione. Sono state create tre versioni degli estratti: con la cassa suonata a tempo, anticipata o posticipata rispetto al beat. I partecipanti (N=42, 8 anni) dovevano giudicare se i musicisti suonavano bene insieme a tempo. I risultati confermano la fattibilità e la brevità del compito (~6 minuti), con prestazioni che correlano con quelle del BAT originale. Per esplorare il legame tra ritmo e linguaggio, i partecipanti hanno completato un test di lettura. Sebbene non sia emersa una correlazione diretta tra abilità ritmiche e linguistiche, i risultati potrebbero risentire di variabili non esplorate, come la produzione ritmica, e del range limitato di età testato. Per questo motivo, stiamo ora includendo un compito di sincronizzazione sensori-motoria ed estenderemo i test ai bambini di 5-7 anni. Parallelamente, stiamo sviluppando una versione per bambini dell'extended Barcelona Music Reward Questionnaire, per esplorare il legame tra reward musicale e abilità ritmiche. Questo lavoro sottolinea l'importanza di considerare le varie fasi di sviluppo nella valutazione delle competenze ritmiche, aprendo nuove prospettive di ricerca e intervento.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Emotions and Motivations 3 / 779

Attivare esperienze trasformative: quale contributo della realtà virtuale?

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Co-authors: Elisa Pancini¹; Luca Bernardelli Bernardelli²; Desirée Colombo³; Maria Folgado-Alufre⁴; Giulia Cremaschi; Rosa Maria Banos⁵

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Contesto: Le esperienze trasformative (ET) possono essere descritte come esperienze brevi, percepite come straordinarie ed eccezionali, che contribuiscono a cambiamenti nella percezione di sé e degli altri, così come nell'identità personale, grazie alla loro capacità di ampliare le proprie conoscenze e intensificare la complessità emotiva. Tali esperienze possono manifestarsi come intuizioni improvvise o epifanie e possono essere evocate attraverso circostanze favorevoli specifiche, incluse esperienze narrative metaforiche supportate dalla Realtà Virtuale (RV).

Obiettivi: questo studio esplora l'impatto trasformativo percepito di una singola esperienza metaforica fruita in modalità immersiva in RV confrontata con l'esperienza audio.

Metodo: E' stato condotto uno studio randomizzato between-subjects per confrontare l'ET di 10 minuti nelle due condizioni (RV Il fiume e la foglia con Oculus Quest 2 vs audio) con un campione di 74 giovani adulti di età compresa tra i 18 e i 30 anni e di nazionalità italiana e spagnola. I partecipanti hanno ascoltato lo stesso script.

Risultati: Dopo l'ET, il gruppo RV ha riportato percezioni significativamente più elevate di trasformatività e piacevolezza rispetto al gruppo di controllo. Inoltre, l'ET in RV ha portato a un incremento significativo di emozioni positive, in particolare speranza e meraviglia, rispetto all'ET in modalità audio. Questi cambiamenti sono stati confermati controllando per alcune differenze individuali come il savoring, la mindfulness e l'apprezzamento per la bellezza.

Conclusioni: I risultati evidenziano il potenziale della RV per promuovere ET e chiariscono alcune specificità in tale direzione. Le implicazioni per gli interventi di promozione del cambiamento positivo in diversi ambiti saranno discusse.

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No

Attention, Perception and Consciousness / 823

Emotion and Time Shape Attentional Engagement: ERP Correlates from a Dot-Probe Task

Author: Giulia Amicucci¹

Co-authors: Federico Salfi ¹; Federica Naccarato ¹; Lorenzo Viselli ¹; Domenico Corigliano ¹; Fabiana Festucci ¹; Daniela Tempesta ¹; Michele Ferrara ¹; Aurora D'Atri ¹

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Introduction: The dot-probe task assesses attentional bias toward emotional stimuli, though dot-locked dynamics, a marker of attentional engagement, remain underexplored. By combining behavioral (reaction times, RTs) and event-related potential (ERP) measures, we examined whether attentional engagement in healthy participants changed over the course of the task as a function of emotional valence.

Methods: Twenty-one female students (22.2±3.0 years) performed a dot-probe task during 64-channel EEG recording, responding to dots following happy/sad faces.

A dot-locked grand-average waveform was computed across valence on midline electrodes to identify P200, N2pc, and P300 components (160-202 ms, 202-230 ms, 230-466 ms) based on surrounding zero-crossings.

To account for lateralization, in right-sided trials EEG signals were swapped, aligning left/right hemisphere to ipsilateral/contralateral responses and averaging separately by dot-replaced image valence. ERP amplitudes and RTs, averaged by task half, were analyzed via 2×2 ANOVA.

Results: No effects emerged for P200 and N2pc. Conversely, P300 showed a Valence×Time interaction: while responses to dot replacing emotional stimuli were similar in the first half of the task, in the second half P300 amplitude was higher when dot replaced positive stimuli across fronto-central and parieto-occipital regions. No effects were observed for RTs.

Conclusions: Findings reveal a dynamic organization of attentional engagement. Early ERP responses remained stable across valence throughout the task, supporting consistent environmental monitoring. However, over time, evaluative processing increased for stimuli from positive context, suggesting preferential allocation toward positive information. These putative top-down mechanisms may adapt emotional priorities with increasing task experience. ERPs captured subtle cognitive-emotional dynamics undetected behaviorally.

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Health, Sport and Wellbeing / 886

Yoga and Young Adults: A Systematic Review on Cognitive and Emotional Outcomes

Author: Martina Rizzuti¹

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In recent years, there has been growing interest in mind-body interventions, such as yoga, in the field of psychology. While existing research suggests that yoga provides mental health benefits, studies specifically targeting healthy young adults (aged 18-30 years) remain scarce. This systematic review aims to assess the impact of yoga on cognitive functioning (e.g. attention, executive functions) and emotional well-being (e.g. anxiety, stress) in this population.

The review protocol has been registered on PROSPERO (ID: CRD42024527762). The search was conducted on three databases (PUBMED, PsycINFO, SCOPUS) until February 2024. Initially, 6,148 studies were identified. After applying strict inclusion and exclusion criteria - such as yoga as the only intervention, the presence of a control group and the exclusion of samples with a clinical diagnosis - 9 studies (n = 570 subjects) were deemed eligible for inclusion.

The selected studies featured Yoga styles (e.g. Hatha Yoga, Yoga Nidra), intervention durations ranging from a single day to 20 weeks, and session durations between 15 and 60 minutes. Results indicated improvements in cognitive domains, in particular attention and working memory, as well as significant reductions in anxiety, stress, and depressive symptoms and an improvement in emotional regulation.

Despite these promising results, the substantial heterogeneity of intervention protocols, outcome measures, and study designs limits generalisability and comparability of results.

In conclusion, yoga appears to be a promising non-pharmacological strategy to support mental and cognitive health in young adults. However, longitudinal and well-controlled studies are essential to confirm its efficacy and guide its standardised implementation.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Methodology 2 / 568

From Features to Goals: Shaping Food Utility Through Shared Features and Goal-Directed Inference

Authors: Francesco Fedeli¹; Yannick Boddez²; Cristina Zogmaister³

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When people encounter a new stimulus, they may draw on their knowledge of similar stimuli to make inferences. This mechanism is captured by the Shared Features Principles (SFP, <https://doi.org/10.1037/xge000077>). However, while SFP facilitates attribute transfer between stimuli, it does not inherently predict behavior. This research integrates SFP with the Goal-Directed Perspective (GDP), which posits that individuals choose actions based on the perceived utility of achieving specific goals. We propose that feature sharing can influence goal-relevant attributes of novel foods, thereby altering their expected utility and shaping food-related behaviors.

Across two pre-registered experimental studies (total N = 340), we investigated whether pairing novel foods with either tasty or healthy products via a shared, non-diagnostic feature (a colored frame) could enhance their perceived tastiness or healthiness, respectively. Study 1 employed unfamiliar food items, while Study 2 replicated the procedure using insect-based foods—a particularly challenging case due to the possibility of pre-existing negative associations. In both studies, participants attributed greater expected utility (assessed via implicit and explicit measures) to target foods paired with goal-relevant sources. Data were analyzed using both frequentist and Bayesian methods.

These findings suggest that SFP-based interventions can systematically modify the perceived utility of foods in serving taste or health goals, including products that may elicit negative reactions, like insect-based foods. This novel integration of SFP and GDP opens promising avenues for promoting sustainable food choices through non-invasive and scalable interventions.

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Lunch and poster 3 / 853

The influence of spatial encoding on the fate of sensory memory representations unselected by the (retro-)cue

Author: Monia D'Angiò¹

Co-authors: Salvatore Gaetano Chiarella²; Antonino Raffone³; Luca Simione⁴; Fabiano Botta⁵

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The role of selective attention in sensory memory and its implications for theories of visual consciousness have been widely explored using retro-cue paradigms. A retro-cue is typically presented after the stimulus array has disappeared, guiding internal attention to a memory representation that is no longer visually available. Studies on retro-cues consistently show that cued items are better recalled than uncued ones. However, the effects of retro-cues on memory maintenance remain a topic of debate, especially when multiple consecutive retro-cues are used. This study aimed to investigate how spatial attention influences the maintenance of sensory memory traces, with a particular focus on uncued items. We implemented a double retro-cueing change detection paradigm, manipulating spatial attention during encoding through a probabilistic spatial pre-cue (70% valid, 30% invalid) across two memory stages: iconic memory (150 ms) and fragile-VSTM (600 ms). Results revealed a general decline in accuracy when two consecutive retro-cues were presented. Importantly, while a valid retro-cue following an invalid one partially counteract the loss associated with the first cue, a second invalid retro-cue incurs additional costs related to items that were not in the focus of attention during encoding. Spatially attended items were more easily retrieved and better maintained, whereas unattended items either failed to enter sensory memory or were too fragile to persist. These results suggest that while retro-cues enhance the maintenance and retrieval of sensory representations, their effectiveness can be modulated by the deployment of attention during encoding, disadvantaging non-selected items.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Lunch and poster 3 / 858**Pupillometric signature of implicit learning of statistical regularities****Authors:** Marco Turi¹; David Burr²; Chiara Terzo^{None}; Paola Binda³¹ *Università del Salento*² *University of Florence*³ *University of Pisa***Corresponding Author:** marco.turi@unisalento.it

Animals learn about the statistical regularities of their environment by a process of implicit learning, a powerful mechanism that may operate by mere exposure.¹ Implicit learning supports processes such as speech acquisition but also learning about the spatial and temporal structure of the world more generally, which is essential for effective interaction.² Here, we used a frequency-tagging technique to demonstrate a pupillometric signature of the learning of the temporal structure (pairing of numerosities) of sequential arrays. Although the numerosity pairings were unnoticed by all participants, the pupil responded clearly to their repetition frequency (1 Hz). Pupillometry allowed us to track the learning as it unfolded (the response became significant after less than 3 min of passive viewing), without ever directing attention to the temporal structure of the stimuli. Diverting attention away from the numerosity feature did not prevent learning, but it did affect the dynamics of the response acquisition. A clear pupillometric response was also elicited by pairing dyads of digits. In all our stimuli, the local features were randomized, implying that learning successfully generalized across stimuli that were locally different and only acquired a temporal structure once their global statistics (overall shape or numerosity) were extracted.

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No

Lunch and poster 3 / 883**Is that my body? The influence of body size and body appreciation on the sense of ownership over a virtual body****Authors:** Anna Flavia Di Natale¹; Stefania La Rocca¹; Claudia Repetto²; Giuseppe Riva^{None}; Daniela Villani³¹ *Università Cattolica del Sacro Cuore*² *Università Cattolica del Sacro Cuore Milano*³ *Dipartimento di Psicologia, Università Cattolica del Sacro Cuore di Milano***Corresponding Author:** annaflavia.dinatale@unicatt.it

The sense of ownership over a virtual body in virtual reality (VR) depends on several factors, including the perceived similarity between the avatar and the user. However, one aspect that has received little attention is the specific role of the avatar's body size. This pilot study investigated whether embodying an avatar with a different body size from one's perceived body affects ownership, and whether this effect is influenced by levels of body appreciation. Additionally, we explored emotional responses associated with the experience (e.g., eeriness, unease, disgust), as well as participants' intention to use the avatar to interact in virtual environments.

Fifteen participants (10 women and 5 men, age: 27.6 ± 4.62) first completed the Body Appreciation Scale and then performed a motor task in VR, observing their avatar in a virtual mirror under four

experimental conditions: similar virtual body non-congruent (user's movements were not mirrored by the avatar), similar virtual body congruent (users' movements were mirrored by the avatar), dissimilar virtual body non-congruent, and dissimilar virtual body congruent.

Results revealed that body size similarity significantly increased ownership. Body appreciation showed a marginal effect, suggesting a possible protective role against the negative impact of body dissimilarity. Data on emotional reactions and usage intention indicate greater resistance to accepting avatars with dissimilar body shapes.

These preliminary results highlight the importance of virtual body size in the embodiment process and offer valuable insights for designing more personalized, inclusive VR experiences that are sensitive to users' body-related perceptions.

If you're submitting a symposium talk, what's the symposium title?:

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Lunch and poster 3 / 940

Photodiode-based triggering system for reliable ERPs recording in visuomotor tasks

Author: Aurelia Schirripa¹

Co-authors: Priscilla Balestrucci²; Océane Duvert³; Matteo Bianchi⁴; Alessandro Moscatelli⁵; Viviana Betti¹

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Achieving precise synchronization between neural, visual, and motor signals is crucial for investigating event-related potentials (ERPs) in sensorimotor paradigms. We developed a high-precision acquisition system integrating 256-channel high-density electroencephalography (hd-EEG), OptiTrack motion capture, and a custom photodiode-based triggering setup to study ERPs during a visually guided reaching task.

A large circle was continuously displayed on screen to represent the touch-sensitive surface. When the participant's finger was not in contact, the circle appeared red; upon contact, it turned black. Visual targets appeared within this black circle and served as cues for the reaching movement. The task included four key event triggers: (1) trial onset, marked by the visual transition of the circle from red to black upon finger contact, (2) arrival at a predefined home position, which triggered target appearance (still unreachable), (3) a color change of the target indicating the go-cue, and (4) trial end, signaled by finger lift (end of contact), with the circle reverting to red.

Two photodiodes detected luminance changes corresponding to these events, with signals sent simultaneously to both the EEG amplifier and the motion capture DAQ, ensuring millisecond-level synchronization. The mean absolute latency difference between EEG and OptiTrack triggers was 4.8 ms.

ERP analysis focused on the home position and trial end. A sustained negativity (CNV) peaked ~280 ms over central electrodes following target appearance. At trial end, visual feedback elicited a biphasic P1-N2 complex over occipital sites. These time-locked responses validate the system's precision for resolving closely spaced neural events in visuomotor tasks.

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No

Lunch and poster 3 / 951**Physiological and psychological markers of recovery after high-intensity anaerobic exercise: Preliminary evidence from a multi-country study****Author:** Luca Laezza¹**Co-authors:** Carlos De la Torre-Perez²; Alessandro Fornasiero³; Martina Vacondio⁴; Barbara Pellegrini³; Stefano De Dominicis⁵; Victor Rubio²; Margherita Brondino⁶¹ *Università di Verona, University of Copenhagen*² *Universidad Autónoma de Madrid*³ *Università di Verona*⁴ *Università di Trento*⁵ *University of Copenhagen*⁶ *Università degli Studi di Verona***Corresponding Author:** luca.laezza@univr.it

Building on restorative theories (Stress Reduction Theory and Attention Restoration Theory), we investigated whether exposure to digital restorative natural environments influences recovery from anaerobic exercise, focusing on the association between physiological stress markers and self-reported psychological restoration.

Italian and Spanish participants (N=35) performed a Wingate anaerobic test, followed by a 3-minute video exposure to a natural/urban environment. Core affect, blood lactate, vertical jump height were assessed across experimental phases (pre, post-Wingate, and post video exposure). Perceived restorativeness (PRS) and psychological restoration (ROS) were collected post-video.

We found significant effects of time on lactate ($p < .001$, $\eta^2 = .843$) and jump height ($p < .001$, $\eta^2 = .402$), but no significant effects of video condition ($ps > .45$). However, small non-significant trends favored the green condition in post-video jump height. Restoration measures showed a significant effect of video: participants who watched the green video reported higher levels of ROS at the end of the procedure ($p = .001$, $d = 1.24$), and rated the environment as having greater PRS ($p < .001$, $d = 1.76$) compared to those who watched the urban video. No significant effects of video were found for core affect, post-video recalled discomfort or enjoyment of the test.

These preliminary findings suggest a divergence between objective physiological recovery and subjective psychological restoration, emphasizing the complexity of recovery processes. After completing data collection, individual differences (e.g., athleticism, nature connectedness, test performance) and contextual factors (e.g., country) will be explored as potential moderators of these effects.

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Lunch and poster 3 / 960**Descrizioni di percorsi: i suoni naturali possono fare la differenza nella formazione delle rappresentazioni?****Author:** Veronica Muffato¹

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Evidenze recenti mostrano che la capacità di formare una rappresentazione spaziale mentale utile per orientarsi nell'ambiente è influenzata dalle emozioni, in particolare quelle positive, che sembrano migliorare la memoria spaziale. Dall'altro lato, le teorie della psicologia ambientale suggeriscono che gli ambienti naturali favoriscono il benessere e le capacità cognitive. Tra questi, la presenza di suoni naturali, rispetto a quelli urbani o neutri, è associata a stati emotivi più positivi e, in alcuni casi, a migliori prestazioni cognitive. In questo contesto, la presente ricerca ha esplorato l'effetto di suoni naturali, urbani e rumore bianco sugli stati affettivi, sulla percezione di rigeneratività e sulla memoria spaziale. Un campione di 160 giovani adulti (107 donne) hanno appreso tre descrizioni di percorsi (descrizioni di tipo route) abbinate a suoni naturali, urbani e neutri (disegno within-subjects). Dopo l'ascolto è stato chiesto di auto-riportare valenza e arousal, la percezione di rigeneratività e la memoria spaziale attraverso un compito di disegno di mappa. I risultati mostrano che i suoni naturali aumentano la valenza emotiva positiva e la percezione di rigeneratività rispetto ai suoni urbani e neutri. Inoltre, sia i suoni naturali che quelli urbani hanno migliorato l'accuratezza del ricordo spaziale rispetto al rumore bianco. Questi risultati confermano il potenziale rigenerativo degli stimoli naturali, suggerendo che l'uso di suoni biofilici nella progettazione degli spazi possa promuovere il benessere. È tuttavia necessario proseguire con ulteriori ricerche per approfondire la relazione tra stimoli naturali e abilità cognitive.

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No

Lunch and poster 3 / 996

Are electromagnetic hypersensitivity and fibromyalgia actually a small fiber neuropathy? A preliminary study

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Fibromyalgia (FM) is characterized by chronic widespread pain with musculoskeletal stiffness and tenderness.

FM patients were investigated with skin biopsy for Small Fiber Neuropathy SFN: Grayston's meta-analysis 2018 concerning 8 studies about FM pooled prevalence of Small Fiber Neuropathy (SFN) (49%).

Electromagnetic hypersensitivity (EHS) is characterized by a variety of no specific symptoms which afflicted individuals attribute to exposure to Electromagnetic field EMF (self - reported).

The study was carried out on 31 subjects: 11 with EHS and FM, 10 with EHS and 10 controls. All subjects were administered nine tests: (SGWB), (RSE), (MSPSS), (CD-RISC), (GSE), (LOC), (BAI), (CES-D), (BFQ).

Furthermore, the subjects underwent skin biopsy

Results showed that thin fiber pathology exists in EHS with or without fibromyalgia FM.

MANOVA performed to assess differences between FM -EHS, EHS and control group for SGWB, RSE, MSPSS, CD-RISC, GSE, LOC, CES- D, BAI and BFQ, was significant. The ANOVAs for each

dependent variables showed just one significant result for BAI. Post-hoc showed significant differences between FM-EHS, EHS and control group ($p < 0.05$). For all test the subjects result's lie under the pathology thresholds.

Furthermore SFN was found in 15 patients showing an epidermal denervatio whereas 6 patients presented a normal epidermal innervation.: 11 of 11 in the FM-EHS group and 4 of 10 in the EHS group showed SFN.

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No

Lunch and poster 3 / 860

Spatial associations of losses and gains: Evidence of a SNARC-like effect of valence in a magnitude classification task

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The SNARC (Spatial-Numerical Association of Response Codes) effect describes the tendency to associate small numbers with the left side and large numbers with the right. Similarly, stimulus valence (positive/negative) is spatially lateralized, with right-handers typically associating negative stimuli with the left and positive with the right. In the present study, we investigated how these dimensions interact when numbers are framed as monetary gains (positive) or losses (negative).

Two experiments were conducted with right-handed participants. In Experiment 1, a valence classification task required participants to classify numbers as gains (green ink) or losses (red ink), pressing a left or right key. Results showed neither a classic SNARC effect nor SNARC-like effects for valence. In Experiment 2, a magnitude classification task required judging whether numbers were smaller or larger than 5, with gains and losses indicated by green or red ink, respectively. Results revealed a classic SNARC effect, with faster responses for small-left and large-right mappings. Moreover, a magnitude $\times$ valence compatibility effect was observed: responses were faster when magnitude and valence aligned (small-losses, large-gains) than when they conflicted (large-losses, small-gains). This effect was stronger in the SNARC-compatible block, suggesting "hyper-compatibility" when hand, magnitude, and valence were congruent (e.g., left-small-losses).

Overall, the findings indicate that both number magnitude and valence influence spatial associations in a magnitude classification task, but not in a valence classification task.

This study was funded by the PRIN 2022 program (project Prot. 20227N2Y73).

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No

Lunch and poster 3 / 973

Beyond Forgetting: The Role of Attentional Dynamics in Sustaining Memory for Naturalistic Environments

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Forgetting is a fundamental aspect of memory, yet the cognitive mechanisms underlying the degradation of complex episodic representations remain a matter of debate. While traditional models characterize forgetting as a linear decline in recall over time, emerging evidence suggests a more nuanced process influenced by attentional dynamics. This study examined how attention during encoding and retrieval shapes memory accuracy and forgetting rates for naturalistic scenes—rich, contextually meaningful stimuli that offer greater ecological validity than isolated objects or letters. Twenty-five participants studied 132 indoor and outdoor scenes while their eye movements were recorded during encoding and across three recognition sessions (30 minutes, 4 hours, and 8 hours later). Attentional spread during encoding was quantified using the Root Mean Square Distance (RMSD) of fixations, while gaze reinstatement during recognition was assessed via the Longest Common Subsequence (LCS) of scan paths.

Results revealed that greater attentional spread during encoding consistently predicted higher memory accuracy, independent of the retention interval. Gaze reinstatement—the similarity of scan paths between encoding and recognition—also positively correlated with recognition accuracy, though its effect diminished over time.

These findings highlight the contributions of both attentional allocation and retrieval processes to memory preservation. They underscore attention's critical role not only in memory formation but also in mitigating forgetting, offering new insights into the dynamic interplay between attention and long-term memory for complex visual scenes.

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No

Lunch and poster 3 / 848

The relationship between sensorimotor synchronization and attentional sensitivity to perceptual violations

Author: Marco Barbaresi¹

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Studies on sensorimotor synchronization (SMS) have shown that the variability (CoV) of both asynchronies and inter-tapping-intervals (ITIs) decreases as the mean ITI (and Inter Onset Interval, IOI) decreases (Repp, 2005). Such relationship is particularly evident in self-paced tapping tasks. The literature also shows that SMS not only facilitates an accurate timing of motor responses, but also supports broader temporal processes involved in motor planning, sensorimotor prediction, and attentional allocation. The present study used an SMS task and an auditory oddball task (AOT) in 21 college students to investigate the characteristics of SMS and its relationship with attentional sensitivity. We focussed on: (1) the pattern of ITIs CoV across various IOIs (500, 750, 1000 ms); and (2) the association between SMS and the detection of rhythmic and pitch deviations in an AOT. Results

showed that ITIs CoV was significantly greater at 500 compared to 750/1000 ms. A regression analysis showed that ITIs CoV at 750 ms predicted the efficiency (as RTs) of pitch deviations detection, but not of rhythmic ones. From a predictive coding perspective, our findings suggest that lower SMS stability at shorter IOIs may reduce the efficiency of updating internal predictive models, promoting the implementation of pre-existing routines. Conversely, higher SMS stability appears to support fine perceptual and attentional abilities. Our preliminary findings offer insights for future studies on perceptual and attentional skills through the analysis of temporo-motor models.

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Lunch and poster 3 / 873

Reshaping Self–Other Representation: The Effect of Compassion Meditation on Peripersonal Space

Authors: Salvatore Gaetano Chiarella¹; riccardo de pastina²

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Introduction. Mindfulness meditation has been shown to enhance social skills (Luberto et al., 2017; Trautwein et al., 2013), as compassion (Gilbert, 2020; Sinclair, 2021). Together, these practices are hypothesized to influence self–other representation: mindfulness reduces self-centeredness, while compassion increases connection with others (Trautwein et al., 2013). This study examines how compassion meditation affects self–other representation by investigating changes in peripersonal space (PPS), the space immediately surrounding the body, using an audio-tactile interaction task (Serino et al., 2007).

PPS is known to be dynamically modulated by social interactions. We hypothesize that even a brief, 15-minute compassion meditation can alter the size and shape of PPS.

Methods. Twenty-five non-meditators completed the audio-tactile task before and after the meditation. During the task, participants were exposed to dynamic, task-irrelevant sound while receiving tactile stimuli on the cheek at five different delays. Reaction times (RTs) to tactile stimuli, depending on the perceived proximity of the sound, were used to estimate PPS characteristics.

Results. Following the meditation, a significant reduction in PPS extent was observed, suggesting a shift in self–other boundaries. This contraction may reflect a reduced need for defensive distancing, consistent with theories positing PPS as a protective space (Graziano & Cooke, 2006; Taffou et al., 2014).

Conclusions. Contemplative practices reshape bodily and relational awareness even in the absence of direct social interaction. This approach is in line with the pattern theory of compassion (Gallagher et al., 2024), which highlights the interaction of cognitive, emotional, and relational elements in cultivating compassion.

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Lunch and poster 3 / 902

Sensorimotor Reactivity to COVID-19 Vaccination: A TMS Study on Vaccine Hesitancy

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Introduction. The Centers for Disease Control and Prevention recommends updated COVID-19 vaccines for the 2024-2025 season, highlighting the importance of vaccination to protect against severe illness and hospitalization. However, vaccine hesitancy remains a significant challenge, impacting the effectiveness of vaccination campaigns and contributing to ongoing infections and outbreaks.

Method. To provide new insights into the psychological mechanisms related to vaccine hesitancy/resistance, we tested the sensorimotor mapping of others' experiences of vaccination in individuals classified as hesitant or resistant to vaccination. We studied the amplitude of motor-evoked potentials in the deltoid, a relevant muscle for vaccine inoculation, during a computer-based presentation of pictures of individuals receiving the COVID-19 vaccine or other control conditions involving that muscle.

Results. We found a selective increase in the excitability of the deltoid motor cortex in highly vaccine-hesitant individuals compared to low-hesitant individuals when exposed to pictures depicting the inoculation of the COVID-19 vaccine, as opposed to the flu vaccine. Importantly, no difference was reported for the control muscle (extensor carpi radialis).

Discussion. These findings suggest that explicit scenes of COVID-19 vaccine injections trigger a somatotopically based facilitatory mechanism, possibly reflecting an automatic/anticipatory response of avoidance (i.e., a flight response) to the specific compound. A similar facilitation is elicited when viewing fearful/threatening pictures, indicating a potential relevance of this affective experience to explain the observed outcomes.

Keywords: COVID-19 anti-vaccination attitude; Motor evoked potentials; Deltoid; Pictures of COVID-19 vaccine injections;

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Lunch and poster 3 / 861

Grasp-compatibility effects for object names do not differ between singular and plural forms

Author: Glenn De Muynck^{None}

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Connections between action and perception have been demonstrated using the grasp-compatibility task, in which participants categorize a visually presented object by performing a power or precision grip. Performance typically improves when the response grip matches the movement used to interact with the object and worsens when it does not (compatible vs. incompatible trials; Ellis & Tucker, 2000; Bub & Masson, 2010). Recently, similar grasp-compatibility effects have been demonstrated by using object nouns and shown to be modulated by adjectives (Tucker & Ellis, 2004; Garofalo et al., 2021). However, no work has tested whether object numerosity affects sensorimotor activation during language processing.

In the present study, we manipulated numerosity using the singular or plural forms of graspable object nouns. In particular, we expect that stimuli that are compatible with a precision grip would become incompatible in the plural form (e.g., with a precision grip, it is easier to grasp a single cherry than multiple ones). Fifty-one participants responded to words denoting graspable objects in either singular or plural form, using precision or power grips. We manipulated Compatibility (compatible vs. incompatible) and Form (singular vs. plural), and we analysed error rates, reaction times, and movement times. Overall, compatible trials yielded better performance, but this advantage was equivalent for singular and plural forms. This result suggests that sensorimotor programs for graspable objects are similarly engaged by singular and plural object names. Future studies should investigate whether numeral adjectives (e.g., one apple, three cherries) and quantifiers (e.g., many apples, some cherries) modulate grasp-compatibility effects.

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Lunch and poster 3 / 903

From healthy ageing to mild cognitive impairment: The role of executive functions

Authors: Giuseppina Elena Cipriani¹; Sara Molfese^{None}; Paolo Diletto²; neri vitali³; Cristiano Manco⁴; Martina Amanzio⁵

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It is well known that not only memory declines but also executive functions (EFs) undergo significant changes during the ageing process.

The aim of this study was to identify neuropsychological differences, particularly in EFs, between cognitively healthy older adults (HA), individuals with subjective cognitive decline (SCD) and patients with mild cognitive impairment (MCI).

A multidimensional neuropsychological battery to assess cognitive performance, mood and general health was administered to three groups of 15 participants each (≥ 60 years). Due to the small sample size and non-normal distribution of the data, we used non-parametric tests (Mann-Whitney U and Kruskal-Wallis) for group comparisons.

Compared to the HA group (7 women, mean age = 72.33 ± 5.37) and the SCD group (7 women, mean age = 71.27 ± 4.98), the MCI group (8 women, mean age = 73.47 ± 4.55) showed significantly lower performance on all neuropsychological measures. Among the EFs, the Trail Making Test (TMT) B-A score was the most sensitive indicator. A multinomial logistic regression showed that each additional second in TMT B-A performance increased the odds of belonging to the MCI group (but not to the SCD group) by 2.8% (OR = 1.028, $p = 0.027$). In addition, the Coloured Progressive Matrices-36 score significantly predicted MCI status (OR = 0.73, $p = 0.01$), but did not differentiate between HA and SCD participants.

Our results emphasise the importance of detailed assessment of EFs in older adults as subtle deficits may help to differentiate between normal and atypical ageing trajectories.

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No

Lunch and poster 3 / 974

The Role of Beta Oscillations in Mental Time Travel, Intertemporal Choice and Prospective Memory: A tACS Study

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Introduction: Future-oriented cognition involves several neurocognitive processes supported by the dorsolateral prefrontal cortex (DLPFC) and beta-band oscillations. This study aimed to investigate the causal role of beta oscillations in the DLPFC during three future-related tasks: Mental Time Travel (MTT), Delay Discounting (DD), and Time-Based Prospective Memory (PM).

Methods: Thirty-four participants (22–29 years) completed the three tasks under two conditions—active and sham stimulation—administered in a counterbalanced within-subjects design, one week apart. Beta-frequency transcranial alternating current stimulation (tACS; 22 Hz, 1.5 mV) was applied bilaterally over the DLPFC (F3–F4).

Results: Results showed that beta-tACS significantly enhanced performance in MTT: participants were more accurate and faster in judging temporal order and showed a stronger tendency to classify undated future events as occurring later. In the DD task, beta stimulation increased temporal discounting, suggesting that future rewards were perceived as more distant. No significant effects were observed in PM, confirming the dissociation between mechanisms for short- and long-range temporal processing.

Conclusions: dLPFC seems causally implied in MTT and its stimulation in beta band may induce a general cognitive enhancement in temporal reasoning. However, the lack of effect on PM could suggest a task-specific neurocognitive mechanisms, or a ceiling effect. This research contributes to our understanding of the neural bases of future-oriented cognition.

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Lunch and poster 3 / 865

Clinical Validity and Utility of Fully Idiographic Network Analysis: A Study of Clinician-Patient Dyads

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Introduction: Network analysis (NA) is increasingly being used in clinical psychology to represent psychopathological processes as complex systems of interacting symptoms. Fully Idiographic Network Analysis (FINA) estimates individual level symptom networks through intensive data collection. This study evaluated FINA's clinical validity and utility in 15 clinician-patient dyads.

Methods: To assess clinical validity, a training-test approach was used to compare clinical models (i.e., symptom networks predicted by clinicians for their patients), empirical models (i.e., symptom networks estimated from patient data using FINA), and null models (assuming symptom constancy) in predicting patient functioning. To assess clinical utility, self-report questionnaires were administered to both clinicians and patients, focusing on FINA's applicability across different patients and settings, as well as its acceptability, ease of use and understanding, and cost.

Results: Results from mixed-effects models indicated that FINA outperformed both clinical and null models in predicting patient functioning, with improved predictive accuracy as the data volume increased. Both clinicians and patients expressed a generally positive attitude toward the utility of FINA, with clinicians rating it more favorably in terms of global clinical utility, applicability across different patients and settings, ease of use and understanding, and perceived costs. Both clinicians and patients found FINA equally acceptable, as a tool that complements and supports clinical work.

Conclusions: These findings underscore the validity of FINA in enhancing clinical assessments and its perceived utility in clinical setting. The study suggests important research and clinical implications, offering pathways to expand FINA's use in clinical practice and further improve its effectiveness.

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No

Lunch and poster 3 / 879

UN'INDAGINE SULL'INTERAZIONE TRA STATO D'USO DEGLI OGGETTI E PERICOLOSITA' PERCEPITA

Author: Stefania D'Ascenzo¹

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INTRODUZIONE: Il presente studio indaga la modulazione dell'effetto di compatibilità spaziale manico-risposta (i.e., affordance effect) in funzione dello stato d'uso di un oggetto (attivo: in uso; passivo: non in uso) e della sua pericolosità (pericoloso; sicuro).

METODO: Sono state utilizzate maniglie “sicure” (maniglie di uso quotidiano) e “pericolose” (i.e., filo spinato avvolto intorno alla maniglia) raffigurante in uso e non in uso, durante un compito di discriminazione della forma (tondeggiante o squadrata).

RISULTATI: È stato utilizzato un disegno misto $2 \times 2 \times 2$, con Pericolosità dello stimolo (sicuro vs pericoloso) come fattore between-subjects, e Stato d'uso di un oggetto (attivo vs passivo) e Compatibilità spaziale (compatibile vs non compatibile) come fattori within-subjects.

I risultati evidenziano una modulazione dell'effetto di compatibilità spaziale in funzione dello stato d'uso dell'oggetto. Emerge, infatti, un'inversione dell'effetto quando l'oggetto appare non in uso e un effetto nullo quando l'oggetto appare in uso. La pericolosità dello stimolo non influenza l'effetto di compatibilità spaziale manico-risposta, tuttavia, analisi esplorative permettono di ipotizzare un possibile ruolo.

CONCLUSIONI: Il presente studio offre spunti sull'elaborazione delle affordance suggerendo che essa sia soggetta a meccanismi di controllo cognitivo che variano in funzione dello stato d'uso di un oggetto e, potenzialmente, della pericolosità percepita.

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Lunch and poster 3 / 852

Lo sviluppo della Memoria Autobiografica Episodica in età prescolare: evidenze da uno studio longitudinale

Authors: Francesca Vecchione^{None}; Loredana Carmen Russo^{None}; Maddalena Boccia^{None}

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La memoria autobiografica episodica (MAE) è centrale nell'arco di vita e, durante lo sviluppo, consente di organizzare le esperienze personali in una narrazione coerente del sé. Tuttavia, la letteratura relativa all'età evolutiva è limitata.

In questo studio longitudinale abbiamo indagato lo sviluppo della MAE in un campione di 8 bambini di 5 anni, che hanno partecipato a due sessioni di test a distanza di un anno. La prima valutazione è stata svolta il giorno dopo un evento collettivo strutturato, attraverso un'intervista semistrutturata(1). La seconda sessione è stata svolta un anno dopo, contestualmente alla rievocazione di un nuovo evento, in modo da misurare sia l'oblio del ricordo, sia lo sviluppo della capacità di MAE. I risultati evidenziano un l'oblio significativo del ricordo a un anno, in linea con la letteratura di riferimento(2), in presenza di un aumento significativo nella quantità di informazioni rievocate sul nuovo evento.

Le produzioni verbali nella rievocazione dell'evento un anno dopo presentano maggiori dettagli percettivi(3).

In conclusione, si rileva un miglioramento significativo della MAE in bambini in età prescolare, suggerendo che non solo aumenta la quantità di informazioni ricordate, ma migliora anche la ricchezza percettiva dei ricordi.

(1) de Paula et al. (2018) *Early Child Development and Care*, 188(8), 1133–1146.

(2) Bauer (2015) *Developmental review* : DR, 38, 146–166.

(3) Levine et al. (2002) *Psychology and aging*, 17(4), 677–689.

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No

Lunch and poster 3 / 982**Facial expression analysis of implicit aesthetic processing****Author:** Davide Nardo¹**Co-authors:** Alessio Ferrato ¹; Lorenzo Battisti ¹; Giuseppe Sansonetti ¹; Mauro Mezzini ¹; Carla Limongelli ¹; Stefano Mastandrea ²; Sabrina Fagioli ³¹ *Università degli Studi "Roma Tre"*² *Università Roma Tre*³ *Università "Roma Tre"***Corresponding Author:** davide.nardo@uniroma3.it

Art has long been associated with promoting well-being, yet the underlying mechanisms remain unclear. Several studies suggest that engaging with art can enhance well-being, even when the artworks express cruel or emotionally intense content. In this study, we aimed to investigate how the implicit processing of art, conveying positive, neutral, or negative emotions, influences subsequent affective processing of a neutral stimulus, specifically through facial expression analysis.

Twenty-three art-naïve participants used the Self-Assessment Manikin (SAM) scale to rate the liking and arousal of emotionally neutral Chinese pictograms (targets) that followed the brief presentation of emotionally valenced artistic primes (positive, neutral, or negative). An adapted version of the Affective Misattribution Task (AMP) was employed to assess the impact of these emotional primes on the judgment of the neutral targets. Facial expressions were recorded using OpenFace software, with two temporal windows of analysis: the first lasting 500 ms to capture microexpressions, and the second lasting 2500 ms to explore the cognitive dimension of emotion.

Our findings revealed that positive primes led to an increased expression of joy, while negative primes activated facial muscles associated with fear in the early temporal window and disgust in later stages of emotional processing. Neutral primes appeared to have no significant effect on facial expressions. These results suggest that aesthetic evaluation can be activated at an implicit level and may play a role in emotional processing, contributing to the promotion of well-being through art engagement.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Lunch and poster 3 / 840****Frail elderly people' impaired anticipatory cognitive brain processing****Author:** luca boccacci¹**Co-authors:** Martina Scalia ¹; Riccardo Borzuola ¹; Valentina Camomilla ¹; Chiara Fossati ¹; Federica Galli ¹; Andrea Macaluso ¹; Fabio Pigozzi ¹; Sabrina Pitzalis ¹; Arnaldo Zelli ¹; Francesco Di Russo ¹¹ *University of Rome "Foro Italico"***Corresponding Author:** l.boccacci@studenti.uniroma4.it

Frailty in older people is a multisystem physiological state associated with poor clinical and functional outcomes (1; 2). This condition may be associated with cognitive decline due to impairment of brain processes and structures, particularly in the prefrontal cortex (PFC) (3). There is currently a dearth of study on cognitive function and brain activity in frailty, despite the high condition's prevalence. The current study examined the frontal and prefrontal brain activity in pre-frail and frail older individuals during the anticipatory phase of a cognitive task using the event-related potential (ERP) approach. ERPs were compared between frail or pre-frail participants (Frail group) and matched

healthy individuals (Robust group), all aged ≥ 65 . The Montreal Cognitive Assessment (MoCa) was used to evaluate cognitive abilities, while the State-Trait Anxiety Inventory (STAI) was used to measure anxiety. The PFC activity was 41% lower in the Frail group compared to the Robust group. Due to this loss of top-down cognitive control, frail individuals may have made more mistakes in their responses (+34%) and had higher levels of anxiety (+17%) compared to the Robust group. The cognitive preparation required to perform accurate task may be reduced due to the PFC degeneration as revealed in this study. Frail individuals may also have elevated anxiety levels as a result of this PFC hypoactivity. This finding was identical in pre-frail and frail people, suggesting that the PFC's anticipatory ERP activity may be an early neuromarker of frailty.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 3 / 956

Impatto della riserva cognitiva sulle funzioni esecutive e sul rendimento accademico degli studenti universitari digitali

Author: Giulia Belluardo¹

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Le funzioni esecutive (FE), come la flessibilità cognitiva, la memoria di lavoro e l'inibizione, sono capacità cognitive di ordine superiore che consentono di regolare il comportamento e raggiungere obiettivi. Esse sono particolarmente rilevanti nel contesto dell'apprendimento ed esercitano un ruolo determinante sulle performance accademiche (PA). È noto che la riserva cognitiva (RC) moduli il funzionamento cognitivo. Questo studio esplora l'impatto della RC sulle FE e sulle PA di studenti universitari digitali, una popolazione studentesca scarsamente studiata e caratterizzata da situazioni socio-demografiche eterogenee. Studenti di un ateneo digitale italiano sono stati invitati a partecipare a una survey. Oltre al rilevamento delle variabili socio-demografiche, è stata utilizzata una batteria di test standardizzati per indagare le seguenti variabili: il CRI-q per la RC; la CFS (che indaga la flessibilità cognitiva) e l'ADEXI (che indaga memoria di lavoro e inibizione) per le FE; le PA sono state valutate con item creati ad hoc. I dati preliminari sono stati analizzati con statistiche descrittive e analisi di moderazione.

Un piccolo campione, attualmente in crescita, ha completato la survey. I risultati, seppur preliminari, sembrano confermare una relazione tra FE e PA. Le analisi di moderazione evidenziano la tendenza di un effetto della RC sulle FE e sulle PA. La RC sembra avere un impatto sulle FE e sulle AP degli studenti universitari digitali. L'incremento del campione e ulteriori analisi statistiche sono indispensabili per confermare i risultati preliminari e per dettagliare meglio gli effetti osservati.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Lunch and poster 3 / 804**Implicit Acquisition of Orthographic Regularities in Italian Children: A Longitudinal Study of Reading, Writing, and Orthographic Judgement****Author:** Paola D'Elia¹**Co-authors:** Chiara Valeria Marinelli¹; Paola Angelelli²; Vincenza Tommasi¹¹ *Università di Foggia*² *Università di Lecce***Corresponding Author:** paola.delia@unifg.it

In transparent orthographies like Italian, children acquire phonological decoding skills rapidly due to consistent grapheme–phoneme correspondences. However, fluent literacy also relies on the internalisation of abstract orthographic patterns that are not explicitly taught.

This study investigated whether Italian-speaking children implicitly acquire orthographic regularities—specifically legality, bigram frequency, and word typicality—during the first two years of primary school, and how these regularities influence reading, spelling, and orthographic judgment performance over time.

Fifty-four children were assessed at four time points (T1–T4) using tasks that tested reading accuracy and speed, spelling (DDO-2), and orthographic judgment. Stimuli included real words, legal pseudowords, and illegal nonwords, systematically manipulated for lexical frequency, word length, bigram frequency, and syllabic structure.

Reading accuracy improved rapidly and plateaued after T2, while reading speed increased progressively. Spelling performance showed a slower, more gradual improvement, consolidating toward T4. Orthographic judgment accuracy increased across sessions, particularly for illegal nonwords, suggesting implicit learning of orthotactic constraints. Bigram frequency had a significant effect, whereas syllable frequency did not. Word length and lexicality also influenced performance, with high-frequency and shorter words eliciting fewer errors and faster responses.

Findings support a multi-componential model of literacy development in which implicit statistical learning, lexical familiarity, and sublexical processing interact dynamically. Even in highly transparent orthographies, orthographic competence emerges through experience-driven learning mechanisms beyond phonological decoding.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Lunch and poster 3 / 838****Correlations between olfactory and gustatory function and cognitive abilities in the elderly: a preliminary study****Authors:** Fabrizio Sanna¹; Carla Masala¹; Maria Petronilla Penna²**Co-authors:** Valentina Cabriolu¹; Francesca Garau¹; Rachele Conti²; Rafaela Mostallino¹¹ *Dipartimento di Scienze Biomediche, Università degli Studi di Cagliari*² *Dipartimento di Pedagogia, psicologia, filosofia, Università degli Studi di Cagliari***Corresponding Author:** fabrizio.sanna@unica.it

Introduction: Aging is a process characterized by a progressive physiological degeneration in global functioning, including the decline of cognitive functions and sensory processes. Previous studies from our Labs report that deficits in chemical senses such as smell and taste can predict the onset of

cognitive and neurodegenerative diseases, highlighting a link between olfactory, gustatory and cognitive deficits. The present study aimed to investigate possible correlations between chemosensory and cognitive functions and variables related to well-being and mood in a group of elderly subjects. Method: Forty-seven subjects were recruited (age range: 57-88 years). Chemosensory function was assessed by the Sniffin'Stick test and the Taste Strips test, while evaluation of several psychological domains was performed by using validated tools, among them the MMSI, FAB, Digit span, Trail Making test, DASS-21, CRI, PWB, etc. Results: Several correlations between chemosensory, in particular olfactory, and cognitive functions and general well-being have been found. Specifically, significant correlations were detected between the olfactory discrimination, phonemic fluency, performance in visual-motor tracking tasks and general well-being. On the contrary, no significant correlations were observed between taste, cognitive functions and variables related to psychological well-being and mood. Conclusions: This is a preliminary cross-sectional study on a small sample of subjects, almost all female, which encourages more in-depth longitudinal studies with larger numbers of participants and improved gender balance. Nevertheless, our results highlight the importance of using chemosensory assessments for the early diagnosis of cognitive decline and for the development of appropriate personalized risk prevention strategies.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Lunch and poster 3 / 813

Does REM sleep Fragmentation affect micro- and macro-structure features of Slow Wave Sleep?

Author: Federica Naccarato¹

Co-authors: Lorenzo Viselli²; Fabiana Festucci²; Federico Salvi²; Giulia Amicucci²; Domenico Corigliano²; Costanza Colombo³; Daniela Tempesta²; Nicola Cellini³; Michele Ferrara²; Aurora D'Atri²

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In sleep disorders characterized by alterations in REM sleep, such as REM sleep behavioral disorder (RBD), also the quality of slow-wave sleep (SWS) is often affected. However, no direct causal relationship between REM sleep disruption and SWS impairment has been demonstrated.

In the current study, we examined the effects of experimental REM sleep fragmentation through vibrotactile stimulation on the macro- and micro-structural characteristics of SWS in healthy subjects. Eleven healthy participants underwent high-density EEG polysomnography during two counterbalanced conditions: "Fragmentation" night, with vibrotactile stimulation to induce cortical arousals during REM sleep, and a "Control" night of undisturbed sleep.

We assessed sleep macrostructural variables and SWS spectral power in standard frequency bands for periods following the first REM sleep cycle. Additionally, we analyzed the morphological characteristics (amplitude, duration, frequency, slope) of slow waves using an automatic detection algorithm. The two conditions were compared using paired sample t-tests.

Analysis of the macrostructural variables confirmed the effectiveness of the experimental REM sleep fragmentation, with an increase in the REM sleep fragmentation index ($t_{11}=9.41$; $p<.001$) and a slight reduction in its duration ($t_{11}=-5.67$; $p<.001$). Data analysis revealed no significant differences in SWS duration or spectral power across frequency bands nor in slow wave characteristics between the control and fragmentation nights.

These findings suggest that experimentally induced REM sleep fragmentation in healthy subjects does not significantly affect the macrostructure or microstructure of SWS. However, further research is needed to fully understand the effects of REM sleep fragmentation on overall sleep quality and its clinical relevance.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 3 / 993

La codifica visiva di strumenti familiari e non familiari

Authors: Luigi Valio¹; Giovanni Federico¹; Maria Cuomo²; Antimo Buonocore¹; Maria Antonella Brandimonte³

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La capacità di interagire con gli strumenti rappresenta una delle espressioni più emblematiche dell'intelligenza umana, poiché riflette l'integrazione di conoscenze percettive, semantiche e sensorimotorie. Nel presente studio di *eye-tracking* abbiamo indagato in che modo la familiarità degli oggetti modula le dinamiche temporali dell'esplorazione visiva in un compito di *free-viewing*. Venticinque partecipanti (14 femmine; età media = 23.6 anni, DS = 3.35) hanno osservato venti immagini di strumenti, equamente suddivise tra strumenti familiari (es. martello, microfono) e non familiari, caratterizzati da forme atipiche. Ogni oggetto è stato suddiviso in due Aree di Interesse: una funzionale (es. la testa di un martello) e una manipolativa (es. il manico di un martello). I movimenti oculari sono stati registrati durante una finestra di presentazione di 1500 ms e analizzati tramite *growth curve analysis* al fine di modellare l'allocazione temporale dell'attenzione. I risultati hanno mostrato una marcata e precoce preferenza per la componente funzionale degli strumenti rispetto a quella manipolativa, indipendentemente dalla familiarità, suggerendo una fase iniziale di elaborazione semantica mirata all'identificazione dell'oggetto. Sul piano temporale, inoltre, l'attenzione verso la parte manipolativa è emersa significativamente prima negli strumenti familiari (circa 250 ms) rispetto a quelli non familiari (dopo 500 ms), suggerendo come l'elaborazione sensorimotoria possa essere subordinata all'accesso semantico. Questi risultati supportano un modello a cascata "semantico-sensori-motorio", secondo cui la codifica visiva procede dal riconoscimento dell'oggetto alla valutazione delle sue affordance (Federico & Brandimonte, 2020; *Scientific Reports*). Il lavoro contribuisce alla letteratura sulla cognizione visiva sottolineando la dinamica interazione tra memoria semantica e pianificazione dell'azione.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 3 / 807

Age-related shifts in retrieval strategies modulated by conceptual interference in long-term visual memory

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Co-author: Moreno Ignazio Coco²

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Long-term visual memory refers to the ability to store and retrieve visual information over extended periods. However, episodic representations may share conceptual similarities, leading to retrieval interference, particularly when multiple distinct episodes must be maintained in memory. Recent work has introduced an index of cumulative conceptual interference, combining capacity demands and semantic similarity, showing that higher interference impairs both target recognition and the correct rejection of unseen objects (lures). However, the impact of this manipulation on ageing—already associated with a decline in the precision of visual long-term memory representations—has not yet been systematically investigated.

Using generalized linear mixed-effects models (GLMER) with cumulative interference as the main predictor, we tested its impact on the recognition performance of previously seen objects (Hits) and unseen objects (Correct Rejections) in 35 younger and 22 older healthy adults. Older adults showed an improvement in recognizing targets as interference increased, suggesting that familiarity-based strategies anchored to gist representations were facilitated by the semantic coherence provided by interference. This conservative approach supports recognition of old items but may limit fine discrimination. In contrast, younger adults, who relied more heavily on recollection, were better at discriminating targets from lures under low interference, but their performance deteriorated as interference increased, reflecting the vulnerability of recollection-based retrieval to semantic overlap. These findings suggest that long-term visual memory in ageing is not merely affected by decline but rather reflects a complex interaction between retrieval strategies and task characteristics.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 3 / 936

Effector-Independent Sources of Variability in Upper and Lower Limb Gestures

Author: Alessandro Arnaudo¹

Co-authors: Jordi Manuella²; Giacomo Guzzardi³; Tommaso Ciceri⁴; Emilia Biffi⁵; Andrea Cavallo⁶; Luca Casartelli⁷

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In recent years, motor variability has been recognized as a promising factor in studying behavioral gestures. Previous studies have explored this construct separately for each motor district, implicitly assuming that most of the variability is effector-dependent. Here, we tried to challenge this implicit assumption by proposing a study design that involves a combined within-subject investigation of upper and lower limbs gestures.

16 healthy participants performed both upper (i.e., pointing and vertical arm extensions) and lower limb tasks (i.e., self-paced walking), while kinematic data were recorded using optoelectronic cameras. We focused on i) shoulder elevation and on the elbow/wrist angular velocities for the upper

limb, and on ii) hip/knee/ankle angular velocities for the lower limb. Grounded on a recently developed method from our group (Manuello et al., 2025), we used Procrustes transformation for assessing motor distance, and multidimensional scaling for analysing variability patterns, ultimately describing each individual's space of motor variability (SoV) as the area covered by ellipses in a two-dimensional space. Results showed a significant within-subject correlation between upper and lower limb SoV ($r = 0.6$, $p = 0.02$). Noteworthy, SoV can be considered a reliable proxy for individual motor fingerprint.

These findings support the idea that at least a certain portion of variability depends on an effector-independent (i.e., "central") source, thereby challenging the hypothesis that motor variability can be fully understood through an effector-dependent approach. To say differently, motor variability is less "motor" than normally hypothesized, and we probably need a multi-layered model of variability (Casartelli et al., 2023).

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Lunch and poster 3 / 833

Il ruolo dell'esecuzione musicale espressiva vs meccanica su piacere e voglia di muoversi

Authors: Eleonora Fullone¹; Léa Entzmann²; Francesca Cantoni²; Laura Ferreri³; Barbara Tillmann²

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Il ritmo è un elemento centrale della musica che suscita piacere, anche grazie al suo legame con i processi sensori-motori. Il groove, ovvero il piacere di muoversi a tempo con la musica, è un'esperienza universale che raggiunge il picco con ritmi di complessità media, bilanciando prevedibilità e sorpresa. Tuttavia, il ruolo di caratteristiche esecutive come tempo, dinamica e articolazione nel modulare piacere e voglia di muoversi è ancora poco chiaro. Il nostro studio indaga come le esecuzioni pianistiche espressive, rispetto a quelle meccaniche, influenzino l'esperienza soggettiva di piacere, voglia di muoversi e complessità ritmica percepita. Adulti non musicisti ($N=95$) hanno ascoltato estratti di 60 brani pianistici non familiari pre-selezionati (30 ad alto groove e 30 a basso groove), eseguiti sia in versione meccanica (MIDI) che espressiva (esecuzione reale), bilanciati per tempo e stile. Dopo ogni ascolto, hanno valutato soggettivamente piacere, voglia di muoversi e complessità ritmica.

I risultati (ANOVA) hanno mostrato un effetto significativo del groove su tutti i ratings soggettivi, con maggior piacere, voglia di muoversi e complessità riportati per i brani ad alto (vs basso) groove. Tale effetto era però modulato dalla versione nel piacere, con più alto piacere per i brani espressivi (vs meccanici) a basso groove. Diverso per la voglia di muoversi, dove punteggi significativamente più alti si sono ritrovati per i brani meccanici (vs espressivi) indipendentemente dal groove.

Lo studio fornisce nuove prospettive sui processi cognitivi alla base del groove, approfondendo la comprensione di come la musica evoca piacere e movimento.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Lunch and poster 3 / 995

A Novel Eye-Tracking Approach to Cognitive Screening in Parkinson's Disease

Author: Celeste Cafaro¹

Co-authors: Ciro Rosario Ilardi ²; Alessio Fracasso ³; Carlo Cavaliere ⁴; Giovanni Cirillo ⁵; Antimo Buonocore ⁶

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² *Università degli Studi di Napoli Federico II*

³ *University of Glasgow*

⁴ *IRCCS Synlab SDN*

⁵ *Università degli Studi della Campania "Luigi Vanvitelli"*

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The Montreal Cognitive Assessment (MoCA) is widely used to screen for cognitive impairment and is considered a reliable tool for detecting cognitive decline in Parkinson's disease (PD). However, being a pen-and-paper test, the MoCA can be time-consuming, cognitively taxing, and stressful for patients, raising concerns about its ecological validity. To address these limitations, eye-tracking paradigms—such as prosaccade and antisaccade tasks—have emerged as less demanding alternatives that still provide insight into specific executive functions.

Building on this approach, we propose a novel oculometric paradigm based on saccadic inhibition (SI): a reflexive suppression of eye movements in response to sudden visual transients, followed by a rapid rebound. SI is involuntary and requires minimal cognitive effort, making it particularly well-suited for clinical populations like PD.

We tested 15 patients with Parkinson's disease using an eye-tracking protocol that included prosaccade, antisaccade, and a visual search task featuring geometrical shapes and brief flashes designed to evoke SI. Each patient also completed the MoCA. While traditional eye movement metrics (e.g., latency, direction errors) did not significantly correlate with MoCA scores—likely due to high variability—SI parameters showed a robust and meaningful association with cognitive performance.

These results suggest that SI may serve as a reliable, low-burden biomarker for cognitive functioning in PD. Compared to conventional tools, SI-based paradigms offer a faster, more objective, and patient-friendly alternative for cognitive screening in clinical settings.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 3 / 925

How temporal summation of second pain develops along trials, trains and across concomitant tactile stimulations

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Temporal summation of second pain (TSSP) is a progressive increase of pain sensation during constant thermal stimulation intensity. Triggered by low-frequency repetitive stimulation of unmyelinated C-nociceptors, such phenomenon has clinical relevance as it reflects central sensitization

mechanisms which appear to be abnormal in chronic pain conditions. Lately, 'affective touch' (AT) has been shown to have pain relieving properties during TSSP but how TSSP develops over time, especially during concomitant AT is unknown. In the present secondary data analysis, thirty-six healthy participants went through three conditions where a TSSP protocol was applied in concomitance with no touch (NoT), discriminative touch (DT) and AT. TSSP was induced by delivering trains of ascending and descending repetitive heat stimulation through a thermode placed on the dorsal side of the participant's right wrist with a stimulation frequency of 0.33 Hz. In total, ten trains of six stimuli each were delivered. Regardless of the condition, in each train, on average, TSSP was evident in the first 4 stimuli. While the final train reached a similar pain level across conditions, the tactile stimulations helped dropping the initial trains, in particular AT. An analysis of 'responders' showed that while both tactile stimulations may lead to pain alleviation in some individuals, AT had a significant greater impact on pain. Finally, after the 6th train sensitization mechanisms may take place. The present study can help similar future studies to better design their experimental TSSP protocols and therefore achieve a better understanding of the effects of their interventions.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 3 / 866

Titolo: Modulazione esogena della frequenza cardiaca e dello stato psicofisiologico

Author: Alessia Salzillo¹

Co-authors: Laura Catalano ¹; Elisabetta Porfidia ; Luigi Trojano ¹; Francesco Panico ¹; Laura Sagliano ¹

¹ *Dipartimento di Psicologia, Università degli Studi della Campania Luigi Vanvitelli*

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INTRODUZIONE: Diversi studi dimostrano che l'ascolto di musica a bassa intensità riduce la frequenza cardiaca (Halbert et al., 2018). Verranno presentati due studi che indagano la possibilità di modulare la frequenza cardiaca e l'ansia attraverso l'ascolto di un battito cardiaco preregistrato. **METODO:** Esperimento1: Ventiquattro giovani adulti sani hanno completato lo State-Trait Anxiety Inventory (STAI) e una Griglia Affettiva (prima, durante e dopo il compito). È stata registrata la frequenza cardiaca, mediante elettrocardiogramma a riposo (baseline) e durante il compito. Il battito pre-registrato è stato presentato per otto intervalli della durata di 25s, 35s, 45s, 55s alla stessa frequenza della baseline (HR), frequenza cardiaca aumentata (HR+), frequenza cardiaca diminuita (HR-). I partecipanti riportavano verbalmente il numero di battiti ascoltati alla fine di ogni intervallo. Esperimento2: Diciotto giovani adulti sani hanno completato lo STAI, la Griglia Affettiva e il Multidimensional Assessment of Interoceptive Awareness. Il compito era articolato in un blocco Attivo (comunicare il numero di battiti ascoltati), Passivo (ascoltare i battiti), e Bip (comunicare il numero di suoni ascoltati) con tre condizioni bilanciate (HR, HR+ e HR-); una traccia audio (battito o suono) veniva presentata per quattro intervalli con diversa durata randomizzata. **RISULTATI:** L'esperimento1 ha evidenziato un aumento della frequenza cardiaca in HR+ e HR- rispetto alla baseline e HR. L'esperimento2 mostra che l'ascolto passivo di un battito cardiaco con frequenza diminuita riduce la frequenza cardiaca (vs baseline). **DISCUSSIONE:** I risultati potrebbero essere replicati in contesti clinici per indagarne l'effetto su pazienti con disturbi d'ansia (Paulus e Stein, 2010).

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Lunch and poster 3 / 939**The Silent Guide: How Inner Speech Shapes New Action Learning and Performance****Author:** Angelo Mattia Gervasi¹**Co-authors:** Claudia Mazzuca²; Anna Borghi³; Claudio Brozzoli⁴¹ *Sapienza University of Rome - INSERM, Lyon Neuroscience Research Center*² *Sapienza University of Rome*³ *Sapienza University of Rome - ISTC, CNR*⁴ *INSERM, Lyon Neuroscience Research Center***Corresponding Author:** angelomattia.gervasi@uniroma1.it**Introduction**

Although the role of language in action learning has always been overlooked, considering the evidence on the role of inner speech (IS) in driving several cognitive processes, we speculate that it plays a role in action learning as well. We used articulatory suppression to impair participants' IS access by disrupting the phonological loop, hypothesizing that IS inaccessibility could lead to poorer motor performances compared to a control group.

Methods

In this preregistered study, 104 healthy participants were randomly assigned to one of two groups: an Articulatory Suppression Group, where participants continuously repeated a syllable during action learning, and a Dual-Task Control Group, where participants executed a finger-tapping task matched in frequency with articulatory suppression. Both groups observed novel sequential hand actions with the sole purpose of reproducing them later.

Results

Participants in the Articulatory Suppression Group showed significantly lower action accuracy and execution quality during the recall phase compared to the control group. This group also showed a higher proportion of non-learners—individuals unable to reproduce the actions at all. Self-reported IS use was significantly lower during the action learning phase than during execution, confirming the effectiveness of articulatory suppression in disrupting IS.

Conclusions

These findings support the hypothesis that IS facilitates the encoding and retrieval of novel actions, offering new evidence in favor of a cross-modality property of IS which also contributes to motor learning. This expands our understanding of IS as a versatile cognitive tool, showing new evidence in relation to the role of language over cognition.

If you're submitting a symposium talk, what's the symposium title?:**If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:****Lunch and poster 3 / 772****Clinimetrics: Toward a Diagnostic Neuropsychology****Author:** Ciro Rosario Ilardi¹¹ *Interdepartmental Research Center on Management and Innovation in Healthcare (CIRMIS), University of Naples Federico II, Via S. Pansini 5, 80131 Naples, Italy*

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The role of *neuropsychology* in dementia diagnosis remains a topic of ongoing debate. The advent of disease-modifying therapies for Alzheimer's disease amplifies the demand for accurate early diagnosis. Biomarker-driven frameworks currently dominate, favoring biological indicators over clinical evaluation. Yet biomarker positivity alone offers limited predictive value for disease onset and progression, reaffirming the indispensable role of neuropsychological assessment. Unfortunately, many neuropsychological tools rely on normative cutoffs that fail to capture disease prevalence and real-world cognitive abilities in target populations. This severely limits their sensitivity, especially in identifying Mild Cognitive Impairment and early-stage dementia. Still today, many clinical neuropsychologists interpret patient data using Excel macros or cutoffs poorly suited to their population—often without critically examining the underlying assumptions or diagnostic implications of these approaches. This introduces substantial risk for computational error, hampers reproducibility, and constrains broader adoption. A paradigm shift toward *Clinimetrics*—grounded in population-specific weighted cutoffs—promises to enhance diagnostic accuracy by optimizing the balance between test sensitivity and specificity based on clinical priorities. Accordingly, open-source, high-level software solutions are urgently needed. Platforms like Shiny apps can automate complex statistical analyses, generate interpretable reports, and ensure transparency and reproducibility across clinical and research environments. Beyond their technical utility, such tools could bridge the gap between research and clinical practice, enabling the exchange of data and the creation of national or cross-national diagnostic references. Ultimately, this prospect would empower neuropsychologist, regardless of technical background, to conduct robust, standardized analyses that strengthen clinical care and scientific progress.

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No

Lunch and poster 3 / 992

Validazione italiana del "Depression, Anxiety and Stress Scales (DASS)" in adulti anziani

Author: Giorgia D'Ignazio¹

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Ansia, depressione e stress sono condizioni psicopatologiche frequenti nella popolazione anziana, ma spesso sottodiagnosticate a causa di presentazioni atipiche e di comorbidità con condizioni mediche e declino cognitivo-funzionale. L'identificazione accurata di tali condizioni richiede strumenti validi, attendibili e adeguati a età e contesto culturale del campione. Il Depression Anxiety Stress Scales (DASS) è uno strumento self-report ampiamente utilizzato per la valutazione dei sintomi depressivi, ansiosi e dello stress percepito. Tuttavia, le evidenze relative alla sua validazione in contesti geriatrici italiani sono limitate. Il presente studio si propone di analizzare le proprietà psicometriche del DASS in un campione di anziani sani, con l'obiettivo di esaminarne la struttura fattoriale e l'attendibilità nel contesto geriatrico italiano. Sono stati somministrati una scheda-anagrafica e il DASS ad un campione di 114 anziani (Età: M = 63.84; SD = 10.58). È stata esaminata la dimensionalità, la coerenza interna ed infine è stato condotto un t-test per campioni indipendenti per analizzare le differenze di genere nei punteggi delle sottoscale. Dall'analisi della dimensionalità emerge una struttura a 3 fattori. I tre fattori hanno una buona attendibilità ($\alpha = .81$, $\alpha = .93$, $\alpha = .93$). L'analisi t-test ha evidenziato differenze statisticamente significative tra maschi e femmine per il Fattore1 ($p = 0,007$) e il Fattore2 ($p = 0,017$), mentre non sono emerse differenze significative per il Fattore3 ($p = 0,096$). Questi risultati preliminari supportano l'uso del DASS nella popolazione anziana, pur suggerendo la necessità di

ulteriori studi per confermarne la struttura fattoriale e l'adeguatezza nei contesti clinici e di ricerca sull'invecchiamento.

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Lunch and poster 3 / 825

Creativity and Cognitive Health: Divergent Thinking in the Context of Successful Aging

Author: NATALE SALVATORE BONFIGLIO¹

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Introduction. The global increase in life expectancy has led to a steady growth in the elderly population. Psychological well-being has been identified as a key factor in promoting healthy aging, as it contributes to the prevention of chronic diseases and supports longevity. Consequently, scientific research has increasingly focused on identifying protective factors that enhance psychological health in older adults. Among the most studied environments are the Blue Zones (BZ)—geographic areas where individuals live significantly longer and healthier lives, characterized by low levels of depression and high psychological well-being.

Recent studies have begun to explore the potential protective role of divergent thinking (DT)—the ability to produce multiple, original solutions to open-ended problems—in aging, including BZ populations. This study aims to investigate the relationship between figural DT, cognitive functioning, and depressive symptoms, and to assess whether DT may serve as a protective factor associated with psychological health in older adults.

Methods. We recruited a sample of 74 older adults (Mage = 74.73; SD = 8.31) residing in a Sardinian BZ near the Barbagia region. Participants completed a cognitive assessment battery and DT tasks, and their depressive symptoms were also evaluated.

Results and conclusions. Better cognitive performance was associated with lower levels of depression, with DT functioning as a mediating variable. These findings suggest that DT may help buffer the negative effects of aging on mental health by enhancing creativity and resilience. Future research should examine interventions aimed at strengthening DT as a means of supporting well-being in aging populations.

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No

Lunch and poster 3 / 832

Preliminary steps for the validation of a multidimensional scale for assessing perceived value of citizens on public spaces

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In Italy, there is a growing need for scientifically validated tools capable of investigating the complex relationship between citizens and public spaces. Such instruments can provide public institutions with valuable approaches and strategies into how valorization processes of places and accessibility to them can impact individual well-being, social cohesion, and community identity.

This study presents the preliminary steps for the validation of a multidimensional scale designed to measure perceived value and some other key constructs about the relationship between citizens and places on the environmental psychology field. The scale was created and implemented on a case study on Poveglia Island, an abandoned island with a relevant historical-cultural value in the Venice Lagoon.

A mixed-methods approach was employed in the construction of the scale, starting with qualitative focus groups conducted in 2024 to generate relevant keywords, then used to select the constructs. The participants involved were 90 (53% women; 29% 19-30 years old, 28% 31-50 years old).

Afterwards, a quantitative pilot survey was administered to a sample of 223 citizens and visitor of the island (59% women; 33% 19-30 years old, 32% 31-50 years old). The reliability of the scale on perceived value was excellent ($\omega = .95$), as well for its dimensions (ω from .78 to .94). Also, Confirmatory Factor Analysis confirmed the goodness of the scale.

To verify the criterion validity other constructs referred to the public space were measured, as perceived restorativeness, place attachment, nature connectedness, participation, motivation to visit, and pro-environmental behavior.

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Lunch and poster 3 / 834

Analisi semantica degli item tramite gli embedding dei Large Language Models per la predizione della struttura fattoriale a priori nei test psicometrici

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Introduzione. La validità di contenuto rappresenta un elemento cruciale nello sviluppo dei test psicometrici. Con l'avvento dei Large Language Models (LLMs), è oggi possibile analizzare la coerenza semantica degli item in maniera preliminare, senza la necessità di raccogliere dati empirici da campioni di rispondenti. **Metodo.** Utilizzando gli embedding testuali generati dagli LLMs, analizziamo la similarità semantica tra gli item e il loro allineamento con le strutture fattoriali teoriche attese. La metodologia prevede l'utilizzo di item provenienti da differenti strumenti psicometrici validati, tra cui l'IPIP-50, il RIASEC Questionnaire, l'Humor Styles Questionnaire (HSQ) il Depression Anxiety Stress Scales (DASS-42) e il Multidimensional Sexual Self-Concept Questionnaire (MSSCQ), al fine di valutare la correlazione tra la semantica degli item e il loro raggruppamento nei principali fattori psicometrici. **Risultati.** I risultati del nostro studio suggeriscono che gli embedding generati

dagli LLMs, sono in grado di catturare in modo efficace e affidabile le somiglianze semantiche tra gli item in tutti i questionari analizzati, mostrando correlazioni da moderate ad elevate con le strutture fattoriali derivanti dalle risposte umane. Conclusioni. Questi risultati suggeriscono che l'analisi semantica basata su LLMs può rappresentare un valido contributo oggettivo e innovativo alla fase di costruzione e validazione dei test, migliorando la coerenza interna degli item e aumentando l'efficienza dei processi di costruzione e validazione psicometrica.

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If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Lunch and poster 3 / 966

Profiling Risk Disposition Through Psychophysiological Insights: A New Digital Task

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Individuals are increasingly required to navigate complex decisions that may involve risk taking which arise from a dynamic interplay between risk perception, risk attitude, situational variables, and individual traits. Affective responses play a central role in shaping how people perceive and respond to risk, in conjunction with more deliberate cognitive evaluations. Research in this area distinguishes between risk-as-feeling (intuitive responses to danger) and risk-as-analysis (reasoned assessment), underscoring the importance of integrating both levels of processing in measurement strategies. Despite increasing recognition of affective influences, current assessment tools focus on risk-taking behaviors or domain-specific tendencies. A new tool is needed to capture the implicit factors driving decision-making under risk. We propose a new digital task designed to assess risk disposition - a general, implicit tendency to approach or avoid risk - using a multimodal approach. Risky decision-making scenarios and neutral scenarios, made of text descriptions and immersive images, will be administered to measure reaction times as an indicator of risk disposition (longer times for risk aversion, shorter for risk approach). Physiological indices (skin conductance and heart rate) will also be recorded to assess sympathetic activation in response to perceived risk. Additionally, self-report measures will be administered to test task validity. This integrated methodology allows for the profiling of individual risk tendencies through implicit, real-time indicators rather than relying solely on self-perception or retrospective reporting.

The proposed tool opens new avenues for research in behavioral economics, health psychology, and public policy, where understanding and mitigating maladaptive risk behaviors is increasingly critical.

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No

Lunch and poster 3 / 507

Offline states and memory retention of true and false memories

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Sleep is well known to boost memory consolidation—but it can also increase false memories, especially for semantically related content. Recent research suggests that other offline states, like quiet wakefulness and mind-wandering, might offer similar memory benefits without the need for sleep. To explore this, we first conducted a meta-analysis comparing memory retention following quiet wakefulness versus active cognitive tasks. We found that tasks involving memory retrieval were particularly disruptive to consolidation. Next, in an online study, we showed that mind-wandering does not impact associative memory. Finally, across two additional online experiments using the DRM paradigm, we found that engaging in a retrieval-based task after learning significantly increased false memories compared to quiet rest. Taken together, these results highlight the potential of waking offline states to support memory consolidation and suggest that the type of post-learning activity plays a critical role in determining whether we retain accurate or distorted memories.

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Lunch and poster 3 / 955

Implicit and emotional responses to mortality in Sufi meditators: evidence from affective misattribution and death-thought accessibility tasks

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Contemplative practices within Sufi tradition offer a distinctive approach to death, emphasizing acceptance, spiritual transcendence, and the dissolution of ego boundaries. In this study, we explored the psychological and implicit effects of long-term Sufi meditation on mortality salience (MS) using an Iranian sample composed of 25 Sufi meditators and 31 matched non-meditators. Participants completed a battery of tasks before and after MS induction, including the Affective Misattribution Procedure (AMP) and a Death-Thought Accessibility (DTA) task. AMP results showed that meditators had overall lower pleasant response rates compared to controls, suggesting a more tempered or restrained affective style. While controls showed a reduction in implicit self-bias after MS induction, Sufi meditators displayed a subtle increase, possibly reflecting a re-centering toward the self in the face of existential threat, consistent with contemplative integration rather than defensiveness. In the DTA task, which assesses the unconscious accessibility of death-related thoughts, Sufi meditators produced significantly more death-related word completions than controls. This heightened accessibility, however, was not accompanied by increased anxiety, as shown by lower scores on state anxiety measures post-induction. These findings support the idea that Sufi meditation fosters a more open and non-defensive cognitive stance toward death and provide preliminary evidence that familiarity with death cultivated through contemplative practice may reduce its associated fear as predicted in the framework of the Terror Management Theory.

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No

Lunch and poster 3 / 962

FLESSIBILITÀ PSICOLOGICA, COMPORTAMENTI A RISCHIO E ONESTÀ ACCADEMICA: UN'ANALISI TRA GLI STUDENTI UNIVERSITARI

Authors: Simone Varrasi¹; Giuseppe Alessio Platania¹; Claudia Savia Guerrera¹; Vittoria Torre¹; Francesco Maria Boccaccio¹; Alberto Sardella¹; Maria Catena Quattropani¹; Concetta Pirrone¹; Sabrina Castellano¹

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La flessibilità psicologica è un costrutto centrale per la salute mentale e l'adattamento nei contesti accademici complessi. Una sua compromissione può associarsi a condotte disfunzionali, come comportamenti a rischio legati a dipendenze e tendenze a mentire o omettere informazioni relative al proprio percorso universitario.

Questo studio ha esplorato le relazioni tra flessibilità psicologica, comportamenti a rischio (inclusi l'uso di sostanze e le dipendenze comportamentali) e la tendenza a eludere la verità nel contesto accademico. È stato condotto uno studio osservazionale trasversale su un campione di studenti universitari italiani.

Gli strumenti utilizzati includono: l'Italian Multidimensional Psychological Flexibility Inventory (IMPFI; Landi et al., 2021) per la valutazione della flessibilità psicologica; lo Screener for Substance and Behavioural Addictions (SSBA; Schluter et al., 2018) per i comportamenti a rischio; un questionario ad hoc per misurare la tendenza a mentire o omettere informazioni accademiche.

I dati sono stati analizzati con statistiche descrittive e correlazioni di Pearson.

È emersa una correlazione negativa significativa tra flessibilità psicologica e comportamenti a rischio ($r = -.44$, $p < .01$), suggerendo che minore flessibilità è associata a maggiori condotte problematiche. Analogamente, è stata rilevata una correlazione negativa con la tendenza a mentire/omettere ($r = -.31$, $p < .05$).

I risultati confermano il ruolo protettivo della flessibilità psicologica nel prevenire condotte disfunzionali e sottolineano l'importanza di strategie preventive e di promozione del benessere nelle politiche accademiche.

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Lunch and poster 3 / 889

Vocal Markers in Aviation of Workload, Stress, Fatigue, and Sleepiness: A Protocol Validation Study

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This study consists of two components: a systematic review and a protocol validation. The first part aims to synthesize existing evidence on how workload, stress, fatigue, and sleepiness affect speech,

with a focus on identifying vocal markers of these states in aviation contexts. Following PRISMA guidelines, a comprehensive search was conducted across Scopus, ScienceDirect, PsycINFO, and Web of Science. Twenty studies met the inclusion criteria and were analyzed to extract recurring vocal features associated with pilots' and air traffic controllers' (ATCs) psychophysiological states. Results indicate that stress and high workload are consistently linked to increased pitch and vocal intensity, reflecting sympathetic nervous system activation. In contrast, fatigue and sleepiness are associated with reduced vocal energy, slower speech rate, and more frequent pauses, suggesting central nervous system downregulation. Mel-frequency cepstral coefficients (MFCCs) emerged as robust and reliable markers across conditions.

Building on these findings, the second part of the study focused specifically on stress, validating an acoustic analysis protocol using real-world pilot-ATC communications recorded during both routine operations and high-stress emergencies. Vocal features were extracted using Praat and standardized via z-scores to control for inter-speaker variability. Confidence intervals were calculated separately for routine and emergency phases to assess changes in vocal behavior with greater precision.

The integration of this validated protocol into aviation safety systems offers promising opportunities for real-time vocal monitoring, enabling early detection of stress and timely interventions—ultimately enhancing performance and reducing risk in critical aviation tasks.

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Lunch and poster 3 / 824

Risposte Esplicite e Implicite ai Volti Infantili: Effetti sul Comportamento di Cura in uno Studio con Simulatore Infantile

Authors: Giacomo Fiacco¹; Roberta Esposito²; Nunzia Landolfo²; Adele Polito²; Lucienne Perreca¹; Francesca Mottola³; Gennaro Catone¹; Vincenzo Paolo Senese²; Carla Nasti³

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I volti infantili rivestono un ruolo cruciale nel *parenting*, attirando l'attenzione degli adulti e attivando risposte esplicite e implicite che regolano il comportamento di cura. Tuttavia, pochi studi hanno indagato se volti con diversa valenza siano elaborati similmente e se tali risposte siano associate a comportamenti di cura reali. Questo studio ha esaminato la relazione tra risposte esplicite e implicite ai volti infantili tristi e felici e il comportamento di cura.

La procedura si è articolata in due fasi distinte, separate da almeno un giorno. Nella prima fase, condotta online, 42 partecipanti ($M = 31.38$, $SD = 5.094$) hanno compilato due Single Category Implicit Association Test e Differenziali Semantici adattati per valutare rispettivamente le risposte implicite ed esplicite a volti infantili felici e tristi. Nella seconda fase, svolta in un setting sperimentale con dual-task, i partecipanti dovevano accudire un simulatore infantile mentre eseguivano un compito rilevante sotto pressione temporale. La sessione, videoregistrata, è stata codificata per valutare la propensione alla cura ($ICC > .80$).

È emersa una debole corrispondenza tra risposte implicite ed esplicite. Solo le risposte implicite ai volti tristi sono risultate associate negativamente e in modo specifico al comportamento di cura, $r = -.386$, $p = .012$, indicando che una valutazione implicita più negativa ai volti tristi era legata a una maggiore propensione all'accudimento.

I risultati indicano che le risposte implicite ai *cue* infantili hanno un ruolo specifico nel comportamento di cura, offrendo evidenza empirica a sostegno di modelli che riconoscono la multidimensionalità dei processi coinvolti nel parenting.

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Lunch and poster 3 / 904

The Cognitive Functioning Instrument: a new cut-off value for subjective cognitive decline

Authors: Paolo Diletto¹; Giuseppina Elena Cipriani²; Sara Molfese^{None}; neri vitali³; Cristiano Manco⁴; Martina Amanzio⁵

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The Cognitive Function Instrument (CFI) is a self-report and partner-report questionnaire designed to quantify subjectively perceived cognitive difficulties in older adults. The aim of this study is to investigate whether it is possible to determine a cut-off score that can distinguish individuals with and without subjective cognitive decline (SCD).

Thirty subjects (14 females; age = 71.8 ± 5.11) were neuropsychologically tested and then divided into two groups according to the presence of subjective cognitive decline: SCD and noSCD. They showed no significant differences in terms of number, gender, age or education. All participants were administered both versions of the CFI questionnaire. Due to the small sample size and the non-normally distributed data, comparisons were made using the non-parametric Mann-Whitney U-test.

We found that the two groups differed significantly in both CFI reports (self: $p = 0.011$; partner: $p = 0.001$). The Receiver Operating Characteristic (ROC) was calculated to measure the discriminatory ability of the instrument to identify SCD. We observed good discrimination for the area under the curve of self-report (AUC: 0.77) and very good discrimination for partner-report (AUC: 0.85). With a specificity of 0.87 and a sensitivity of 0.8, it was therefore possible to determine a cut-off value for CFI-partner ≥ 3 , with which 84.6% of SCD subjects can be correctly identified.

Our results suggest that the CFI, particularly the partner report, appears to be an effective tool for differentiating individuals with SCD, with a cut-off value ≥ 3 . Future research is needed to validate these findings

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No

Lunch and poster 3 / 894

“Era meglio ai nostri tempi”: la relazione tra salute percepita e benessere soggettivo nelle diverse generazioni

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Negli ultimi anni, salute e benessere sono diventati temi centrali nella ricerca psicologica, con crescente attenzione agli indicatori soggettivi. La salute percepita e il benessere soggettivo rappresentano due costrutti interconnessi, sebbene la forza di questa relazione possa variare in base all'appartenenza generazionale e alle variabili sociodemografiche. Il presente studio si propone di esplorare salute percepita e benessere soggettivo in quattro generazioni (Baby Boomers, Generazione X, Millennials e Generazione Z). È stato utilizzato un questionario self-report, somministrato online, composto da strumenti validati per la misurazione della salute percepita (SF-36), del benessere soggettivo (PANAS-T e SWLS), del supporto sociale percepito (MSPSS) e dello stress percepito (PSS). I risultati preliminari su un campione di 96 partecipanti (77 donne; $M = 32.9$, $SD = 11.6$) mostrano significative differenze generazionali. I Millennials e la Generazione Z riportano punteggi più elevati di dolore rispetto ai Baby Boomers ($p < .05$) e alla Generazione X ($p < .05$). Inoltre, la Generazione X ha ottenuto punteggi significativamente più bassi nella salute generale rispetto ai Millennials e alla Generazione Z ($p < .01$), mentre la Generazione Z ha mostrato una maggiore percezione del supporto sociale rispetto alla Generazione X ($p < .05$). Le differenze generazionali si sono riscontrate anche nel benessere soggettivo, con i Millennials che evidenziano un legame più forte tra benessere emotivo e riduzione delle emozioni negative ($p = .022$). Studi futuri dovrebbero approfondire queste differenze generazionali con l'obiettivo di progettare interventi mirati per migliorare il benessere nelle diverse fasi della vita.

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Lunch and poster 3 / 911

Treating Temporal Disorders in Spatial Neglect Using Virtual Reality and Prismatic Adaptation

Authors: Giulia Franco¹; Greta Vianello²; Giuliana Vezzadini³; Chiara Forlani³; Gennaro Ruggiero⁴; Francesco Ruotolo⁴; Tina Iachini⁴; Caterina Bertini¹; Michela Candini¹

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Introduction: The Mental Time Line model suggests that temporal intervals are represented along a left-to-right oriented line. Patients with right brain damage, especially those with neglect (N+), underestimate time durations. This distortion can be reduced by manipulating visuospatial attention, such as through Prismatic Adaptation. Also, a link between the motor system and time perception exists: when individuals perform an action, their temporal encoding becomes more accurate. Based on this evidence, we hypothesized that actively performing movements in a first-person perspective within a Virtual Reality (VR) environment could help reduce the temporal disorders observed in neglect patients.

Methods: N+ patients underwent 10 daily-sessions over 2-weeks of treatment. In the first week, patients completed 5 sessions of PA inducing a leftward after-effect and 5 VR sessions. In the VR scenario, patients performed actions and reproduced or estimated their duration. During second week, neutral PA lenses were combined with VR. To assess temporal deficit, N+ patients performed a Time Reproduction and a Time Estimation Task before, after, and at follow-up (1 week). The performance

at baseline was compared with N- patients and healthy controls (HC).

Results: At the baseline, the N+ group reproduced longer temporal intervals and show an underestimation compared with HC and N- patients. Crucially, both manipulations (leftPA+VR; neutralPA+VR) significantly improved N+ patients' performance at each task. These effects were maintained at follow-up.

Conclusion: Our results confirm PA's effectiveness in ameliorating temporal deficits and demonstrate that a VR-based treatment may be used to rehabilitate temporal disorders, offering an engaging rehabilitative context.

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Lunch and poster 3 / 935

Nature and Music Videos Promote Recovery from Induced Stress

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Exposure to natural environments supports well-being by reducing psychological and physiological stress, as suggested by the Stress Recovery Theory. However, most studies have focused on the stress-relieving effects of green landscapes and elements, with limited investigation of broader biodiversity or dynamic representations of nature.

This study tested whether digital exposure to nature –videos featuring varied ecosystems with tailored instrumental music –could facilitate recovery after stress.

107 participants completed a stress-inducing task, the Markus and Peters Arithmetic Test. During the recovery phase, the experimental group (n = 55) watched a 15-minute nature video, while the control group (n = 52) sat quietly alone in a room without external stimulation. Anxiety and affect were assessed using the 6-item State-Trait Anxiety Inventory (STAI) and the Positive and Negative Affect Schedule (PANAS), before and after the task and recovery. A wearable sensor continuously recorded heart rate (HR) and skin conductance level (SCL).

Linear mixed effects model analyses revealed no significant differences between groups in anxiety and affect. However, during the recovery phase, the experimental group showed lower HR ($p < .01$) and SCL values ($p < .05$) compared to the control group, reflecting a greater reduction in physiological arousal.

These findings suggest that digital exposure to nature supports physiological stress recovery, even when participants are not aware of it, or this improvement is not reflected in questionnaire responses. Digital experience of biodiverse nature may offer a practical means of supporting well-being, especially where direct access to nature is limited.

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No

Lunch and poster 3 / 958**Embodied minds in a digital age: environmental influences on neurocognition, personality, and psychopathology****Author:** Daniela Pia Rosaria Chieffo¹¹ *Clinical Psychology Unit, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy; Department of Women, Children and Public Health, Catholic University of the Sacred Heart, Rome, Italy***Corresponding Authors:** danielapiarosaria.chieffo@policlinicogemelli.it, deny.menghini@opbg.net, marco.delgiudice@units.it

This presentation explores the dynamic interplay between environmental influence, neurocognitive development, and personality organization as a central mechanism in the emergence of psychopathology during pre-adolescence and adolescence. Grounded in contemporary research in developmental neuroscience and epigenetics, we propose that environmental input –ranging from caregiving and socio-relational contexts to pervasive digital exposure –might influence and model brain structure and function through epigenetic modifications, leading to enduring changes in cognitive architecture. These neurobiological adaptations may affect core cognitive domains such as executive functioning, emotion regulation, self-representation, and mentalization. Resulting shifts in cognition contribute to the reorganization of personality traits, including emotional regulation, self-perception, and behavioral control, which in turn may increase vulnerability to psychopathological trajectories. This model reframes the development of psychopathology not as a product of fixed or inherited neurobiological deficits, but as the outcome of a continuous, reciprocal interaction between brain, cognition, and environment. Central to this framework is a reconceptualization of the mind as an embodied, environmentally responsive system –where cognitive and behavioral processes are dynamically shaped by neuroplasticity and sensorimotor experience. Special attention is given to the role of digital and social environments as emerging neurodevelopmental factors capable of influencing attentional systems, executive functions, and motor-sensory integration. By integrating environmental, neurobiological, and cognitive dimensions, this contribution aims to advance a developmental psychopathology model that deepens the understanding of personality construction and mental health across early developmental stages, while proposing new directions for early prevention and intervention.

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Lunch and poster 3 / 968**Incontrare la parte compassionevole: uno studio online su self-compassion, rilassamento e differenze individuali****Authors:** Silvia Francesca Maria Pizzoli¹; Lucrezia Savioni²; Stefano Triberti²¹ *Università Cattolica Del Sacro Cuore, Facoltà di Psicologia*² *Dipartimento di Psicologia e Scienze della Salute, Università Telematica Pegaso***Corresponding Author:** silviafrancesca.pizzoli@unicatt.it

Le tecniche di self-compassion rappresentano un approccio promettente per la promozione del benessere psicologico, in particolare nei contesti digitali, che ne facilitano l'accessibilità e l'autonomia d'uso. Il presente studio, attualmente in corso (n = 50 partecipanti), si propone di valutare l'efficacia di una breve tecnica narrativa di self-compassion, fruibile online in modalità auto-somministrata e asincrona, in un campione di partecipanti sani.

Nello specifico, gli obiettivi principali sono: (1) valutare l'esperienza soggettiva immediata derivante

dall'utilizzo della tecnica in termini di rilassamento e stato emotivo percepito; (2) analizzare il ruolo di variabili individuali (autostima, resilienza, connessione corporea) nell'influenzare l'esperienza; (3) esplorare le rappresentazioni soggettive della parte compassionevole evocate durante l'esercizio, con attenzione a contenuti autobiografici, percettivi e simbolici. Ai partecipanti viene richiesta la compilazione di questionari su variabili individuali quali l'autostima, la resilienza e la connessione percepita con le proprie sensazioni corporee (misurate mediante la Rosenberg Self-Esteem Scale, la Resilience Scale e la Scale of Body Connection). Viene poi proposta una breve tecnica di self-compassion, dopo la quale i partecipanti sono invitati a descrivere la figura compassionevole evocata durante l'esercizio. Prima e dopo la tecnica vengono inoltre misurati il rilassamento momentaneo e l'esperienza emotiva (Relaxation State Questionnaire e Self-Assessment Manikin). La partecipazione ha una durata complessiva di circa 10 minuti.

Si ipotizza un aumento significativo del rilassamento e del benessere emotivo post-intervento, modulato da caratteristiche individuali. Il progetto intende contribuire allo sviluppo di interventi digitali brevi ed evidence-based, orientati alla promozione della self-compassion e alla diffusione di pratiche accessibili di supporto psicologico.

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Lunch and poster 3 / 964

Reaching e grasping di oggetti nella Realtà Fisica e in Mixed Reality: un'analisi cinematica ed elettromiografica

Author: Denis Migliori¹

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Introduzione

Il presente lavoro ha l'obiettivo di confrontare il reaching e grasping nella realtà fisica (RF) vs. mista (RM). La scarsa letteratura circoscrive il confronto ad ambienti di realtà virtuale (RV), in assenza di feedback aptico. La nostra condizione RM prevede invece che l'input visivo sia fornito in RV, ma l'azione venga eseguita nell'ambiente fisico. L'ulteriore novità consiste nel modulare l'obiettivo delle azioni.

Metodo

I partecipanti (16) erano divisi in due gruppi: al I si chiedeva di raggiungere e ruotare una manopola; al II di afferrarla per aprire/chiudere (meaningful-goal). Entrambi i compiti erano eseguiti in RF e RM. Abbiamo registrato la cinematica del movimento (CM), posizionando tre marker (pollice-indice-polso), e il profilo elettromiografico (EMG), applicando due elettrodi (tricipite-deltoide). Abbiamo somministrato tre questionari: RHI, NASA-TLX e PresenceQuestionnaire.

Risultati

Abbiamo analizzato: 1)CM: durata reaching; massima apertura pollice-indice; picco di velocità e accelerazione al polso, latenze; 2)EMG: area sotto la curva nelle due finestre (250ms) che precedono e seguono l'overt movement.

L'analisi qualitativa di quattro partecipanti suggerisce che velocità e accelerazione sono più elevate in RF rispetto a RM, con latenze coerentemente maggiori in RM. In entrambi gli ambienti velocità e attivazione muscolare sono maggiori in caso di obiettivo significativo. I questionari (n=16) mostrano

che la qualità dell'interfaccia è positivamente correlata con senso di proprietà e con feedback aptico.

Conclusioni

Sebbene il movimento appaia più lento in RM che in RF, è interessante che la modulazione del goal determini un pattern coerente in entrambi gli ambienti. I risultati saranno discussi evidenziando gli sviluppi promettenti.

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Lunch and poster 3 / 963

Parallel semantic reading of multiple words in aging

Author: MATILDE MENGHINI¹

Co-authors: Carlotta Lega ²; Fabrizio Zeri ¹; Laura Veronelli ³; Luisa Girelli ⁴; Roberta Daini ³; Silvia Primativo ⁵; Valentina Bandiera ⁶

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Reading, like other complex abilities, can change with age and older adults may experience fatigue and rely more on contextual cues for compensation. Reduced visual acuity and increased crowding likely narrow the visual span, which in turn could affect semantic processing in the parafovea and slow down reading.

We investigated these age-related differences by examining parafoveal-on-foveal and parafoveal pre-view effects using the Rapid Parallel Visual Presentation paradigm (Primativo et al., 2022).

Specifically, we assessed whether adults aged 65+ show diminished parafoveal processing and whether visual span limitations contribute to reading slowdown. We hypothesized longer reading times for older adults compared to younger participants, maintained accuracy for foveal words but reduced accuracy for parafoveal words and a decreased visual span. Furthermore, we expected a preserved or even enhanced advantage for semantically related words.

Initially, we assessed visual parameters through an optometric examination and excluded participants with low vision.

Participants read pairs of words presented for 150 ms, with and without semantic relationship, and we recorded reaction times and accuracy. Preliminary results from a group of young adults (M age = 24.88±2.52 years) and a group of older adults (M age = 70±2.1 years) show overall differences in speed and accuracy, but faster reading times and higher accuracy for semantically related pairs for both groups. Furthermore, visual span correlates with parafoveal accuracy in older adults. Our results suggest that aging affects some components involved in reading but not all, and preserved mechanisms can compensate for those that decline.

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Lunch and poster 3 / 976**VALUTAZIONE PSICOLOGICA DEL BENESSERE NEGLI STUDENTI UNIVERSITARI: IL RUOLO DELLA REGOLAZIONE EMOTIVA****Author:** Claudia Savia Guerrera¹**Co-authors:** Giuseppe Alessio Platania¹; Simone Varrasi²; Francesco Maria Boccaccio³; Vittoria Torre⁴; Alberto Sardella²; Maria Catena Quattropani²; Concetta Pirrone⁴; Sabrina Castellano²¹ *Department of Education Sciences*² *Dipartimento di Scienze della Formazione, Università degli Studi di Catania*³ *Dipartimento di Scienze della Formazione, Università di Catania*⁴ *Università degli Studi di Catania, Dipartimento di Scienze della Formazione***Corresponding Author:** claudia.guerrera@unict.it

Il benessere psicologico degli studenti universitari è un indicatore chiave per la qualità dell'esperienza accademica e per la prevenzione del disagio psichico. Tra i fattori coinvolti, la regolazione emotiva si configura come un meccanismo cruciale, spesso associato a livelli di disagio psicologico e a un peggior rendimento accademico.

Questo studio trasversale ha esplorato la relazione tra difficoltà nella regolazione emotiva, disagio psicologico e performance accademica, analizzando l'effetto modulatore di variabili individuali ed epidemiologiche (genere, età, corso di studio, abitudini motorie, precedenti esperienze psicologiche). Il campione era composto da studenti universitari italiani, valutati mediante la Difficulties in Emotion Regulation Scale –Short Form (DERS-SF), la Scala di Kessler (K10), un questionario sulle prestazioni universitarie e un modulo anagrafico strutturato.

Le analisi hanno mostrato una correlazione positiva significativa tra disregolazione emotiva e disagio psicologico ($r = .62$, $p < .001$), e una correlazione negativa con la performance accademica ($r = -.41$, $p < .01$). Inoltre, livelli più elevati di disagio e difficoltà di regolazione emotiva sono stati riscontrati tra le studentesse, gli studenti più giovani, coloro che non praticano attività fisica e chi ha una storia di pregressi psicologici.

I risultati evidenziano l'importanza di sviluppare interventi mirati sulla regolazione emotiva, integrati con un'analisi delle vulnerabilità individuali, per promuovere il benessere psicologico e il successo formativo nella popolazione universitaria.

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Lunch and poster 3 / 863**IL RUOLO DELLA rTPJ NELLA PRESA DI DECISIONE SOCIALE: EVIDENZE DA UNO STUDIO TMS****Author:** Antonella Ferrara¹**Co-authors:** Francesco Panico¹; Laura Sagliano¹; Luigi Trojano¹¹ *Dipartimento di Psicologia, Università degli Studi della Campania Luigi Vanvitelli***Corresponding Author:** antonella.ferrara1@unicampania.it

INTRODUZIONE: Diversi fattori neurali e cognitivi sono implicati nella presa di decisione sociale così come misurata attraverso il Mini-Ultimatum Game (Mini-UG; Falk et al., 2003), tra cui l'attivazione della giunzione temporo-parietale destra (rTPJ) e processi di mentalizzazione (Güroğlu et

al., 2010). Questo studio approfondisce il contributo causale della rTPJ nel ruolo di rispondente nel Mini-UG, utilizzando la stimolazione magnetica transcranica ripetitiva (rTMS). METODO: Ventisei partecipanti sani di sesso femminile (19-27 anni) hanno completato il Mini-UG nel ruolo di rispondente; questo paradigma consente di valutare la presa di decisione in diverse condizioni di intenzionalità. Attraverso una storia di copertura i partecipanti erano informati di giocare con un proponente reale (in realtà uno script preimpostato); il grado di fiducia nella storia veniva misurato attraverso un'intervista conclusiva su scala Likert. Ogni trial prevedeva un'offerta iniqua contrapposta a una di tre possibili alternative, tra cui una anch'essa iniqua (no-alternative trial). Compito del rispondente era accettare o rifiutare l'offerta ricevuta. La stimolazione rTMS della rTPJ (vs Vertex, di controllo) era alternata tra quattro blocchi sperimentali. RISULTATI: Nei partecipanti che hanno creduto alla storia di copertura ("believers"; n=19) si è riscontrato un aumento dei rifiuti nei no-alternative trials durante stimolazione della rTPJ rispetto al Vertex; nei "non-believers" (n=7) i rifiuti restavano elevati durante entrambe le stimolazioni. CONCLUSIONE: Il maggiore numero di rifiuti dei no-alternative trials in seguito a stimolazione della rTPJ è compatibile con l'interferenza con processi di mentalizzazione, fornendo dati a supporto di una relazione tra correlati neurali e fattori cognitivi nelle decisioni sociali.

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Lunch and poster 3 / 952

Representational Momentum reveals the joint contribution of context and kinematics to action representation

Author: Camilla Maronati¹

Co-authors: Valentina Berrada¹; Eugenio Scaliti²; Naomi Ferrara³; Andrea Cavallo¹

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Recent studies have shown that observed kinematic information drives action understanding, even in the presence of misleading contextual priors. Moreover, at the perceptual level, prior beliefs about observed actions' goal has a top-down influence on perception, biasing it in the direction of predicted future course. This results in a perceptual shift known as Representational Momentum (RM). In this study, we investigated how contextual priors and movement kinematics jointly shape both action understanding and perceptual shifts. We presented 16 participants with videos of hands reaching for objects of different weights (heavy/light), which suddenly stopped halfway. We manipulated both the participants' prior expectations about the objects' weight (correct/incorrect) and the amount of kinematic information in the presented movements (high/low). Participants performed a sequential dual task: (I) a Representational Momentum task, in which they had to click on the last point reached by the hand before it disappeared; (II) an Action Observation task, in which they had to classify the object's weight. ANOVA on the RM effect revealed a significant interaction between prior and kinematic informativity ($F(1,15)=17.452$; $p<0.001$), with a greater positive perceptual shift observed when prior was correct and kinematic informativity was high. ANOVA on action understanding sensitivity (d') revealed main effects for both prior ($F(1,15)=17.641$; $p<0.001$) and kinematic informativity ($F(1,15)=5.229$; $p=0.037$), with higher values for correct priors and highly informative movements. These findings demonstrate that both top-down (priors) and bottom-up (kinematics) information influence action understanding and, interestingly, that they contribute to a forward bias in the perceptual representation of observed actions.

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Lunch and poster 3 / 929

”Exploring the Relationship Between Sexual Orientation and Moral Reasoning”**Author:** Alice Lia Carmen Giunta¹**Co-authors:** SIMONA MASSIMINO²; Amelia Gangemi²; Carmelo Mario Vicario¹ *International School of Advanced Studies, Center for Neuroscience, University of Camerino, 62032 Camerino, Italy;
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Messina, Italy*² *Università di Messina***Corresponding Author:** alice.giunta@unicam.it**ABSTRACT**

Recent research has indicated higher levels of morally relevant personality traits—psychopathy, Machiavellianism, and narcissism (collectively known as the Dark Triad)—among non-heterosexual individuals. However, little is known about how sexual orientation may influence moral reasoning. In this study, we examined moral reasoning using the Moral Foundations Questionnaire (MFQ-30) in a sample of 31 non-heterosexual individuals (20 males, 3 asexual; mean age = 35.12, SD = 10.04) and 90 heterosexual individuals (16 males; mean age = 32.8, SD = 11.04). Additional variables known to predict moral evaluation—interoceptive awareness (assessed via the MAIA-2), disgust sensitivity (DS-R), empathy (QCAE), and emotional processing (TAS-20)—were also measured. After applying Bonferroni corrections, results revealed a significantly lower overall MFQ-30 score among non-heterosexual participants ($M = 87.29$, $SD = 13.96$) compared to heterosexual participants ($M = 97.74$, $SD = 17.61$), with significant differences specifically in the Authority/Respect and Purity/Sanctity subscales. Furthermore, consistent with existing literature, positive correlations were found between MFQ-30 scores and subscales of the DS-R, QCAE, and MAIA-2 among heterosexual individuals. While the small sample size of the non-heterosexual group and gender imbalance within the heterosexual group limit the generalizability of the findings, the results offer preliminary evidence that non-heterosexual orientation may be associated with lower endorsement of certain moral foundation values. Emotional and cultural influences could help explain these differences.

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No

Lunch and poster 3 / 946

What am I grasping? Deepening cortical and corticospinal spatiotemporal dynamics underlying grasping observation**Author:** Giacomo Guidali¹**Co-authors:** Eleonora Arrigoni¹; Alberto Pisoni¹; Nadia Bolognini¹¹ *Department of Psychology, University of Milano-Bicocca***Corresponding Author:** giacomo.guidali@unimib.it

Introduction. Observing people perform actions activates a network of fronto-temporo-parietal brain regions known as the Action Observation Network (AON). Prior research suggests this network can engage specialized pathways depending on action features, though their temporal dynamics remain unclear.

Methods. We conducted two experiments with 50 healthy participants using an action observation paradigm involving intransitive (i.e., a grasping movement presented in isolation), object-directed (i.e., a hand grasping a bottle), and social-directed (i.e., a hand grasping another hand) grasping movements. Experiment 1 used electroencephalography (EEG) and microstate analysis to examine AON activation and its temporal evolution while observing the abovementioned stimuli. Experiment 2 assessed motor resonance –i.e., corticospinal facilitation during action observation –via TMS at various time points from different muscles involved in the depicted grasps to relate better the cortical and corticospinal dynamics of action mirroring.

Results. In Experiment 1, intransitive and social-directed grasps elicited similar fronto-parietal activity patterns up to 250 ms from action onset, while object-directed actions showed greater posterior activation. From 250 to 450 ms, all stimuli evoked distinct temporo-parietal activity profiles. Experiment 2 revealed stimulus- and muscle-specific MEP enhancements (i.e., motor resonance) only at 200 ms for intransitive and object-directed grasping movements. No facilitation occurred at later timings; instead, results suggested motor cortex inhibition.

Conclusion. Passive observation of grasping movements with varying targets engages the AON with distinct temporal and spatial dynamics. Cortical and corticospinal responses reflect complementary mechanisms of action mirroring, especially for simple actions like those used in the present study.

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Lunch and poster 3 / 906

The positive effect of preserved cognition in subjective cognitive decline: a longitudinal study

Authors: neri vitali¹; Giuseppina Elena Cipriani²; Sara Molfese^{None}; Paolo Diletto³; Cristiano Manco⁴; Martina Amanzio⁵

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Recent longitudinal studies emphasise the importance of early indicators of cognitive decline, such as subjective cognitive decline (SCD), which is associated with a higher risk of cognitive impairment. Our aim was to investigate the cognitive and behavioural changes in individuals with SCD over time. 18 individuals with SCD (both women and men) aged 60 years and older were recruited from the local community. They underwent a multidimensional neuropsychological assessment both at baseline (T0) and after approximately 12 months (T1). The presence of SCD was confirmed using the Jessen's criteria (2020) and the Cognitive Function Instrument (CFI), which includes both self- and partner-reports. Parametric and non-parametric analyses were performed taking into account the data distribution.

Compared to T0 (13 women, age: 72.28 ± 5.18 ; education: 12.94 ± 3.75), participants showed significant differences at T1 (age: 73.39 ± 5.27) in: Beck Depression Inventory (BDI, $U = 118.5$; $p = 0.047$), Lookup7+ ($t = -2.39$; $p = 0.028$) and CFI partner-report ($t = 2.38$; $p = 0.029$).

At T1, participants showed similar performance on almost all cognitive tests, which is consistent with the stable trajectory of SCD in healthy older adults. In addition, we observed an improvement in depressive symptoms and general health as well as a decrease in their partner's perception of cognitive decline. These results may suggest that awareness of preserved cognition leads to an improvement in mood (BDI), general health (Lookup7+), but also in the observer's perception of cognitive difficulties (CFI partner report).

Future studies with larger samples are needed to replicate these results and validate this positive effect.

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Lunch and poster 3 / 893

Effetti del bias additivo nei processi di immaginazione mentale

Author: Maria Antonella Brandimonte¹

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Il bias additivo è una tendenza automatica che porta a preferire soluzioni basate sull'aggiunta piuttosto che sulla sottrazione, anche quando queste ultime risultano più funzionali (Adams et al., 2021). Sebbene l'aggiunta appaia cognitivamente più accessibile, studi sull'immaginazione visiva hanno mostrato che, in condizioni di controllo cognitivo esplicito, le operazioni sottrattive risultano generalmente più semplici e meno dispendiose in termini di risorse cognitive rispetto a quelle additive (Brandimonte et al., 1992; Miyake & Shah, 1999). Ciò suggerisce che la preferenza per l'aggiunta non sia dovuta a una reale superiorità funzionale, bensì a un automatismo cognitivo. Tuttavia, resta poco chiaro se e come il bias additivo influenzi i processi spontanei di visual imagery, ovvero quelli che si attivano in assenza di istruzioni esplicite o controllo deliberato. Il presente studio si propone di colmare questa lacuna, esplorando gli effetti del bias additivo in contesti di immaginazione visiva spontanea e analizzando in che misura tali effetti siano modulati dal carico cognitivo del compito. Ottantadue partecipanti (età 18–30 anni) hanno svolto un compito di manipolazione mentale di figure visive, articolato in due condizioni sperimentali: carico cognitivo elevato (manipolazione di una figura mantenuta in memoria) e carico cognitivo ridotto (manipolazione di una figura visibile durante il compito). I risultati evidenziano una predominanza nell'utilizzo di strategie additive, più marcata in condizioni ad alto carico cognitivo. Ciò indica che il bias additivo è attivo anche nei processi spontanei di visual imagery, modulato dalla disponibilità di risorse cognitive e dall'interazione tra processi automatici e deliberati.

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Keynote 3: Maarten Marsman / 1000

Bayesian Methods for Network Modeling in Psychological Research

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Network modelling is quickly gaining ground as a promising approach to understanding psychological phenomena. A 2018 review identified approximately 400 papers on network modelling in psychology, and a 2023 review found nearly 1,400 papers on cross-sectional designs alone, illustrating the field's rapid growth. While network models have become particularly influential in psychopathology, they are now increasingly used across diverse areas of psychology and in a range of study designs, including the growing use of intensive time-series data. A central goal in network

analysis is to evaluate hypotheses about the network's structure, defined as the configuration of relations between variables. However, current methods face two major limitations. The first is that they typically estimate a single network and provide no way to express the uncertainty involved in selecting that structure from limited data. The second is that, although they often produce sparse networks to balance model complexity and fit, they cannot distinguish between a lack of evidence for a relation and evidence for the absence of that relation. These limitations complicate the interpretation of network results and raise concerns about the reliability of the conclusions drawn from them. The core problem with current methods is their inability to represent the uncertainty involved in network inference. In a reanalysis of 126 published network datasets, we found that this uncertainty is often substantial. However, standard tools provide no way for researchers to quantify or communicate it. As a result, researchers are typically unaware of how uncertain their results may be. This can lead to overconfidence in the reported networks and, ultimately, to potentially misleading conclusions. In this talk, I argue that addressing the limitations of current network methods requires a shift toward Bayesian modelling. Bayesian approaches offer a principled framework for expressing and reasoning about model uncertainty, which is essential for drawing reliable inferences from finite data. I will demonstrate how these methods can be used to analyze both cross-sectional and longitudinal data, and I will outline a research agenda focused on developing software tools that make the Bayesian approach to network modelling accessible to applied researchers across psychological subfields.

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Old and new perspectives on the study of human memory / 629

Sex differences in episodic memory for public events: a male advantage?

Author: Giulia Marselli^{None}

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Memory differences between men and women have been a research topic for some time: Rubin et al. (1999) found no sex differences in the distribution of autobiographical memories throughout life, their significance, the ratings assigned to them, or the knowledge of events. The only exception they found was that men scored higher than women on factual questions about current events and baseball.

Our goal was therefore to replicate this pattern of results, while also exploring in greater depth whether demographic variables such as age and education might play a role in these outcomes. For this purpose, we conducted a study with 260 participants: 153 females (mean age: 50.2, SD: 18.4, mean schooling years: 15.0, SD: 3.91) and 107 males (mean age: 48.0, SD: 17.3, mean schooling years: 15.9, SD: 3.64). The Episodic Memory for Public Events scale of the MA-Self (Autobiographical Memory of the Self) was administered: this scale is composed of 32 items divided into four subscales (2005/2009, 2010/2013, 2014/2017, 2018/2021).

We explored the influence of sex, age and education on episodic memory for public events performance, through a series of Generalized Linear Models (GLM) using the Gamma probability distribution with the inverse link function. Results showed that sex, schooling years and age play a significant role in the total score of the episodic memory for public events performance. Moreover, men tend to perform better than women, but this result is affected by age and schooling, and it varies depending on the test subscales.

If you're submitting a symposium talk, what's the symposium title?:

Old and new perspectives on the study of human memory (id #578)

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

The Psychology of Space Exploration and Extreme Environments / 926

Decision-making and stress in Isolated and Confined Environments: findings and insights from systematic investigations in spaceflight analogs

Author: Pierpaolo Zivi¹

Co-authors: Stefano Sdoia ²; ROSSELLA VENTURA ³; Denise G. Ferravante ⁴; Fabio Ferlazzo ¹

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Background

Long-duration space missions and future settlements on the Moon or Mars raise concerns about how the unique environmental and social conditions of long-term isolation and confinement affect human cognition. Crewmembers in these environments operate under high levels of autonomy, making effective decision-making critical for managing high-stakes situations. However, empirical evidence is still limited.

Objective

The research project examines how long-term isolation and confinement in ground-based spaceflight analog environments affect cognitive functions, focusing on decision-making processes. It was hypothesized that isolation would affect habitual and deliberative decision-making differently. Data were collected longitudinally from two winterover crews during a one-year stay at the Antarctic Concordia station and participants of the SIRIUS-20 8-month confinement study. These studies followed previous evidence obtained in the Arctic and other isolation facilities.

Methods

Participants completed three computerized decision-making tasks in each session: the Iowa Gambling Task (IGT), the Game of Dice Task (GDT), and the Markov Decision Task (MDT). Subjective and physiological stress measures were also collected.

Results

Decision-making under risk (GDT) remained stable, but performance on uncertainty-based tasks (IGT and MDT) changed over time. During mid-isolation, crewmembers at Concordia showed altered learning patterns while SIRIUS participants exhibited shifts in decision strategies. Stress indicators at Concordia partially reflected these behavioral changes.

Conclusions

Long-term isolation affects decision-making under uncertainty, particularly during the central phase. To improve countermeasures for spaceflight, future studies should explore the interacting role of specific environmental stressors, account for individual differences, and adopt more naturalistic and personalized approaches.

If you're submitting a symposium talk, what's the symposium title?:

The Psychology of Space Exploration and Extreme Environments

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 884

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science

Author: Daphne Gasparre¹

¹ *University of Bari Aldo Moro*

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Over the past few decades, neuropsychological assessment has undergone significant evolution. Traditionally based on paper-and-pencil tests administered by clinicians, the field is now embracing digital formats offering enhanced standardization, replicability, and objectivity. It is widely acknowledged that administration procedures can influence patient performance, affecting both clinical validity and research data quality. The adoption of computerized tools aims to reduce such variability by promoting controlled and neutral administration.

This symposium will explore the transition from traditional to innovative tools in neuropsychological assessment, emphasizing the enduring importance of classic instruments for clinical evaluation alongside the need for continual updating. We will highlight the necessity of new standardizations of traditional measures and examine how digital innovations can enhance accuracy and objectivity. While digitalization presents exciting opportunities, it also introduces challenges regarding data privacy, ethical considerations, and the equivalence of digital versus traditional formats.

Presentations will include a discussion of recent standardization efforts for widely used and new cognitive tests, addressing their clinical relevance for adult and elderly populations. Further the benefits and challenges of broad clinical implementation will be examined, focusing on open science, procedural standardization, ethical approvals, and privacy regulations. The symposium will conclude an overview of future directions, a showcase of a novel digital platform for cognitive assessment, integrating neuropsychological, biometric, and physiological data for a multimodal evaluation approach. Together, these contributions highlight the importance of merging traditional clinical expertise with technological innovation to enhance diagnostic precision and patient care.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Old and new perspectives on the study of human memory / 578

Old and new perspectives on the study of human memory

Authors: Giulia Marselli^{None}; Daniele Gatti¹

Co-authors: Francesca Maria Rodio²; Gianmarco Convertino³; Mara Stockner

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² *IUSS - Istituto Universitario di Studi Superiori Pavia*

³ *Sapienza, University of Rome*

Corresponding Authors: francesca.rodio@iusspavia.it, gianmarco.convertino@uniroma1.it, giulia.marselli@uniroma1.it, daniele.gatti@unipv.it, mara.stockner@uniroma1.it

Chair(s): Giulia Marselli e Daniele Gatti

Human memory is a complex cognitive function that ranges from basic abilities to high-level processes. In this symposium, we aim to explore the study of human memory from multiple perspectives, bringing together evidence from various subfields. The five talks will cover a wide range of topics, with the specific goal of showcasing the diversity and depth of potential applications in memory research. Specifically, the talks will for address autobiographical memory in relation to sex and age differences, include cross-cultural comparisons, and conclude with investigations into (semantic) false memory formation, tested across different modalities.

Speakers:

- Giulia Marselli
- Gianmarco Convertino
- Mara Stockner
- Francesca Rodio
- Daniele Gatti

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile / 671

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile

Authors: Andrea Bosco¹; Paolo Taurisano²; Santo Di Nuovo³; davide marocco⁴

¹ *Dipartimento di Scienze della Formazione, Psicologia, Comunicazione, Università degli Studi di Bari 'Aldo Moro'*

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L'aumento dell'aspettativa di vita, seppur si configuri come una conquista della società contemporanea, impone oggi una revisione profonda dei sistemi sanitari e sociali. In questa prospettiva, l'invecchiamento attivo si configura come paradigma essenziale per promuovere la salute nella terza età, coniugando motivazione, capacità e opportunità di vita quotidiana. Con questo simposio proponiamo una riflessione multidimensionale sulle sfide cognitive, psicologiche e ambientali dell'invecchiamento. Verranno presentati i risultati di studi che esplorano il ruolo della solitudine come fattore di rischio per il declino cognitivo e le potenzialità delle tecnologie digitali per una prevenzione

più sensibile ai fattori relazionali. Verranno presentati protocolli innovativi, come E-Move e RAISE!, che integrano tecnologie mobili e metodologie embodied per sostenere autonomia e benessere psicofisico in modo personalizzato e sostenibile. Inoltre, verranno presentate strategie di stimolazione ambientale mediante simulazioni di scenari naturali e culturali, evidenziandone i benefici sul piano attentivo ed emotivo anche in contesti di limitato accesso agli spazi reali. Infine, si discuterà l'importanza di potenziare la formazione geropsicologica e di promuovere politiche inclusive capaci di integrare salute mentale, tecnologie intelligenti e progettazione urbana. Il simposio intende tracciare una linea di ricerca e intervento che sia al tempo stesso concreta, innovativa e sostenibile, per rispondere alle nuove esigenze di una popolazione anziana in continua evoluzione.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia / 630

Pensiero ripetitivo negativo: validazione italiana di due strumenti per la misurazione di un processo transdiagnostico.

Author: Benedetta Visiello¹

Co-authors: Alessandra Vergallito¹; Gaia Locatelli²; Laura Benedan³; Leonor J Romero Lauro¹

¹ *Department of Psychology, University of Milano-Bicocca*

² *IUSS Cognitive Neuroscience (ICoN) Center, Scuola Universitaria Superiore IUSS, Pavia, Italy*

³ *Bicocca-Applied Statistics Center, Department of Economics, Management and Statistics, University of Milano-Bicocca, Milano, Italy*

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Introduzione: Il pensiero ripetitivo negativo (repetitive negative thinking, RNT) è uno stile di pensiero disfunzionale caratterizzato da pensieri negativi ricorrenti, percepiti come automatici e difficili da controllare. È considerato un processo transdiagnostico, ovvero implicato nello sviluppo e nel mantenimento di diversi disturbi psicopatologici. Esempi tipici sono la ruminazione e il rimuginio, sebbene la loro misurazione risenta dell'influenza dei criteri diagnostici di depressione e ansia. Questo studio ha tradotto e validato in italiano due strumenti diagnosi-indipendenti: il Repetitive Thinking Questionnaire (RTQ-10) e il Perseverative Thinking Questionnaire (PTQ), già disponibili in altre lingue.

Metodi: I questionari sono stati tradotti seguendo linee guida internazionali. 340 partecipanti (100 maschi, età 36.8 ± 15.2) hanno risposto ad una batteria di questionari somministrati online attraverso la piattaforma Qualtrics (durata 15-20 minuti). Oltre ai questionari da validare (RTQ-10 e PTQ) sono state somministrate delle scale self-report standardizzate per valutare la validità convergente (ruminazione, rimuginio, sintomi di ansia e depressione). Consistenza interna, struttura fattoriale e validità convergente dei questionari sono state analizzate.

Risultati: Entrambe le scale hanno mostrato buona consistenza interna ($\alpha > .90$). L'analisi fattoriale esplorativa ha confermato una struttura a tre fattori per il PTQ e a un fattore per il RTQ-10, in linea con la letteratura. I punteggi hanno mostrato correlazioni positive con le altre misure valutate.

Conclusione: I risultati confermano la validità e l'affidabilità delle versioni italiane del RTQ-10 e del PTQ come strumenti per la valutazione del RNT e si configurano come strumenti utili per la ricerca e la pratica clinica in un'ottica transdiagnostica.

If you're submitting a symposium talk, what's the symposium title?:

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia.

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia / 648

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia

Authors: Alessandra Vergallito¹; Leonor J Romero Lauro¹

Co-authors: Andrea Moro²; Anna Vedani³; Benedetta Visiello¹; Daniele Saccenti²

¹ *Department of Psychology, University of Milano-Bicocca*

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Negli ultimi quindici anni l'interesse per un approccio transdiagnostico alla salute mentale è cresciuto significativamente. Questo modello si basa sull'idea di studiare, diagnosticare e intervenire sui disturbi mentali concentrandosi sui processi neurobiologici e psicologici condivisi tra diverse condizioni psicopatologiche, piuttosto che su singole categorie diagnostiche. Il modello transdiagnostico consente di superare alcune criticità dell'impostazione categoriale, come la frequente comorbidità, di cogliere meglio la complessità individuale, di favorire interventi più flessibili e personalizzati e di ridurre il rischio di stigmatizzazione.

Il simposio presenterà alcune linee di ricerca che indagano processi transdiagnostici, con l'obiettivo di approfondirne il funzionamento psicologico e neurale e di discutere nuove strategie di intervento. Il primo contributo illustrerà due questionari validati in italiano per la misurazione del pensiero ripetitivo negativo, un processo caratterizzato da pensieri negativi, ripetitivi e ricorrenti, vissuti come difficili da interrompere dagli individui. Il secondo contributo approfondirà il ruolo del delay discounting come indice di impulsività e disregolazione comportamentale. Il terzo si focalizzerà invece sulla metacognizione, ovvero la capacità di valutare e regolare i propri processi cognitivi, quale fattore chiave nell'insorgenza e nel mantenimento della psicopatologia. Infine, l'ultimo intervento proporrà un approccio integrato di psicoterapia e stimolazione cerebrale non invasiva, illustrando i risultati ottenuti in pazienti con disturbo depressivo maggiore e ansia subclinica.

Nel complesso, il simposio offrirà una riflessione sulle potenzialità dell'approccio transdiagnostico, evidenziando come l'integrazione tra psicologia sperimentale, neuroscienze e pratica clinica possa promuovere una comprensione più approfondita dei disturbi psicologici e favorire lo sviluppo di interventi efficaci ed evidence-based.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

The Psychology of Space Exploration and Extreme Environments / 921

The Psychology of Space Exploration and Extreme Environments

Author: Pierpaolo Zivi¹

¹ *Dipartimento di Psicologia, Sapienza Università di Roma*

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Motivated by the need to support crews on future long-duration space missions, psychological research on extreme environments has significantly increased over the last decade, examining how prolonged isolation affects health, well-being, cognition, and emotion. However, the broader effects on psychological adaptation processes remain unclear.

This symposium presents a multidisciplinary set of recent empirical investigations examining psychological and cognitive adaptation to spaceflight hazards using ground-based analogs. These serve as models to investigate key stressors individuals will face during future space operations.

Isolation and confinement are among the most significant psychosocial challenges of spaceflight. Pierpaolo Zivi will present the findings obtained in studies conducted at the Antarctic Concordia research station and in a closed habitat simulation, investigating their effect on decision-making and stress. Other potential analogs to explore the psychological impact of prolonged isolation are currently also being tested. In this regard, Claudio Zavattaro will present findings and insights from a recent solo sailing study.

Operating in extreme environments may require dealing with fatigue, disrupted sleep, and hypoxia. Relatedly, Sara Spinabelli will present recent results regarding cognitive fatigue in alpine soldiers during military training at high altitudes.

Another pivotal spaceflight hazard is microgravity, which can be investigated through parabolic flights and other models of microgravity. Raffaella Ricci presents results using these approaches, providing valuable insight into the effects of weightlessness on cognition.

By integrating insights from different approaches, this symposium offers a cutting-edge view of the recent advances in psychological research in spaceflight and extreme environments, highlighting research gaps and future directions.

If you're submitting a symposium talk, what's the symposium title?:

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile / 677

Allenare mente e corpo: il contributo della tecnologia mobile per un invecchiamento sano, attivo e sicuro

Authors: antonella.lopez¹; Andrea Bosco²

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² *Dipartimento di Scienze della Formazione, Psicologia, Comunicazione, Università degli Studi di Bari 'Aldo Moro'*

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Il processo di invecchiamento è accompagnato da un progressivo declino delle capacità cognitive e fisiche, in particolare di quelle spaziali, fondamentali per il mantenimento dell'autonomia nella vita quotidiana. Sebbene i training combinati –cognitivi e fisici–abbiano mostrato effetti significativi nel migliorare e/o mantenere le capacità funzionali delle persone anziane, la loro efficacia risulta spesso compromessa da scarsa sostenibilità e adesione da parte degli anziani, a causa dell'elevata complessità o dell'interferenza con le abitudini quotidiane (Walton et al., 2018). Per superare queste criticità è stato costruito, all'interno del progetto "Testing the efficacy of remote, sustainable empowerment protocols in promoting psycho-physical well-being in the life-span", il training "RAISE! Route to Active Independence through Spatial Enhancement" che integra esercizi cognitivi e fisici in modo ecologico e personalizzato, con l'obiettivo di potenziare le rappresentazioni mentali dello spazio, migliorare l'orientamento e sostenere l'autonomia nelle persone anziane (e.g., Wiener et al., 2020).

Sebbene il training RAISE! rappresenta una strategia promettente per il potenziamento delle funzioni

spaziali e dell'autonomia negli anziani, la sua applicazione pratica può risultare complessa. Infatti, un intervento di questo tipo richiede la presenza di operatore, ma anche la progettazione di compiti personalizzati, calibrati sulle caratteristiche individuali di ciascun partecipante. Questi elementi, se da un lato ne aumentano l'efficacia, dall'altro ne ostacolano la diffusione su larga scala, data la complessità della strutturazione dell'intervento.

In tale scenario, l'utilizzo di una tecnologia mobile come una app, si propone come una soluzione in grado di aumentare significativamente la fattibilità del training.

If you're submitting a symposium talk, what's the symposium title?:

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 1037

Saluti e apertura

Corresponding Author: daphne.gasparre@uniba.it

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 948

Renewing the Traditional: Updated and Openly Available Normative Data of the Montreal Cognitive Assessment (MoCA; version 8.1)

Author: Caterina Dapor¹

Co-authors: Alessia Simonetto²; Angela Bruzzano²; Arianna Saccomanno²; Domiziana Lupi²; Elisa Arbia²; Elisa Siccardi²; Giulia Massa Rolandino²; Giulia Vuerich²; Konstantinos Priftis²; Margherita Rossi²; Maria Devita²; Martina Dessì²; Pamela Iannizzi²; Sara Zuliani²

¹ *University of Trento*

² *University of Padova*

Corresponding Author: caterina.dapor@unitn.it

The need for updated and openly available normative data represents a crucial challenge in contemporary neuropsychological assessment. Traditional paper-and-pencil tests remain widely used in clinical practice, yet many still rely on outdated norms, often inaccessible due to commercial restrictions. These limitations affect diagnostic accuracy, undermine clinical autonomy, and compromise the validity and reliability of assessments.

These issues will be addressed through the case study of the recent Italian standardization of one of the most widely used paper-and-pencil screening tests, the Montreal Cognitive Assessment (MoCA, version 8.1). Beyond providing updated normative values, this standardization incorporated cognitive reserve among the potential predictors of participants' performance. This methodological choice responds to growing evidence on the protective role of cognitive reserve in age-related cognitive decline and its relevance in interpreting neuropsychological outcomes. Specifically, it was examined whether cognitive reserve could improve the accuracy of normative adjustments beyond traditional demographic and biological factors.

Finally, this study offered a practical case study to reflect on methodological and ethical issues related to the use of neuropsychological tests without openly available normative data. Accordingly, we will outline how Open Science principles can promote greater transparency, reproducibility, and accessibility in neuropsychological testing, ensuring tools remain valid, ethically sound, and clinically useful in diverse and evolving populations.

If you're submitting a symposium talk, what's the symposium title?:

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Old and new perspectives on the study of human memory / 660

Age differences in the appraisal of past and future transitional events: evidence from the transitional impact scale and linguistic analyses

Author: Gianmarco Convertino¹

Co-authors: Mara Stockner²; Giuliana Mazzoni²

¹ *Sapienza, University of Rome*

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Transitional events are significant life experiences that organize autobiographical memory by introducing substantial psychological and material changes to individuals' everyday lives. The amount of change associated with transitional events is measured by the Transitional Impact Scale (TIS). In this study, we employed an adapted version of the TIS for both past and anticipated future events to investigate the role of age in shaping the cognitive appraisal and the linguistic characteristics of memories for transitional experiences.

305 participants (Age, $M = 27.77$, $SD = 11.32$; range = 18–64; 76 males) completed both the past and future versions of the TIS, provided verbal narratives of their transitional experiences, and completed additional psychological measures.

Results revealed that older participants rated past transitional events as more emotionally positive compared to younger individuals, suggesting a possible age-related positivity bias in the evaluation of autobiographical memories. Conversely, older participants rated future transitional events as less positive than younger participants. Moreover, age was negatively associated with the perceived material change of future events, indicating that older individuals anticipate less material disruption in their future life transitions. In contrast, no significant age-related differences were found on perceived psychological change for either past and future events.

These findings, along with linguistic analyses of transcribed narratives, will be discussed within the framework of the Transitional Theory of Autobiographical Memory, which posits that major life transitions play a central role for the organization of life narratives and self-concept, across the lifespan.

If you're submitting a symposium talk, what's the symposium title?:

Old and new perspectives on the study of human memory

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile / 675

Mettersi comodi e viaggiare: simulazioni di ambienti naturali e museali per il benessere nella terza età

Author: Giuseppina Spano¹

Co-authors: Elisabetta Ricciardi²; Andrea Bosco³

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L'invecchiamento attivo richiede strategie innovative per promuovere il benessere psicologico e cognitivo in una popolazione anziana sempre più numerosa e diversificata. Crescenti evidenze suggeriscono che l'esposizione a contesti naturali o culturalmente rilevanti, anche in formato virtuale (Richesin et al., 2021; Van Houwelingen-Snippe et al., 2021), possa favorire miglioramenti nell'attenzione, nell'umore ed elicitarne una sensazione di perceived restorativeness, offrendo soluzioni accessibili e sostenibili per coloro che hanno limitato accesso agli ambienti reali (Spano et al., 2023).

In un esperimento, abbiamo esaminato gli effetti di video 2D ad alta definizione riproducenti visite simulate a scenari naturali e museali, rispetto a una condizione di controllo senza stimolazione visiva. La popolazione era composta da 88 partecipanti (44 giovani adulti, 44 anziani). I risultati indicano che gli anziani sperimentano un miglioramento significativo dell'attenzione dopo l'esposizione a contesti museali rispetto agli ambienti naturali e alla condizione di controllo. Inoltre, sia nei giovani che negli anziani, la perceived restorativeness risulta significativamente aumentata dopo l'esposizione sia agli ambienti naturali che museali rispetto ai controlli. Non sono invece emersi cambiamenti significativi nelle emozioni e nella memoria. I dati ottenuti suggeriscono che anche tecnologie relativamente semplici e facilmente implementabili, come i video ad alta definizione su un semplice schermo, possano rappresentare strumenti efficaci di empowerment psicologico e cognitivo. Questi risultati aprono nuove prospettive per interventi clinici, riabilitativi e preventivi a favore della qualità della vita nella terza età, promuovendo un invecchiamento attivo attraverso soluzioni tecnologiche a basso costo, accessibili e adattabili a diversi contesti di cura.

If you're submitting a symposium talk, what's the symposium title?:

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

The Psychology of Space Exploration and Extreme Environments / 931

Long-term solo sailing as an analogue for deep-space missions: Insights from the Global Solo Challenge.

Authors: Claudio Zavattaro¹; Hilary Serra¹; Eduardo Rosa¹; Marco Nannini²; Raffaella Ricci³

¹ *University of Turin*

² *Global Solo Challenge*

³ *Università di Torino, Dipartimento di Psicologia*

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Studies in isolated, confined and extreme (ICE) environments demonstrated that stressors, analogous to those present during spaceflight, induce detrimental effects on human well-being. However, several ground-based models do not replicate the ever changing environmental conditions astronauts will face in deep-space missions, which are similar to the ones experienced by maritime explorers of the past centuries. Based on these considerations, we explored the psychological effects of long-term solo oceanic sailing as a possible analogue for space deep-space mission.

AB finished the Global Solo Challenge 2023 in around 155 days, completing two questionnaires daily. The first assessed total sleep time (TST), sleep quality (SQ) and sleepiness perception (SP), the second emotional state with 8 adjective pairs based on the Circumplex Model, clustered in 4 emotional factors.

According to the Mann-Kendall test, SQ ratings followed a negative trend ($p=0.003$), while high- ($p=.021$), and low-arousal emotions ($p=.004$) a positive trend. Notably, Generalized Least Square models revealed that TST was positively associated with SQ ($p<0.001$) and negatively associated with SP ($p<.001$), and that SP was positively associated with low-arousal emotions ($p<.001$).

Long-term solo sailing led to significant trends in sleep quality and high-arousal emotions in line with previous results of ICE environments studies. Furthermore, the increasing low-arousal emotions over time could be explained by the association with increase in sleepiness perception. Long-term solo sailing may be employed to simulate stressors present during spaceflight and in deep-space missions.

If you're submitting a symposium talk, what's the symposium title?:

The Psychology of Space Exploration and Extreme Environments

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia / 647

Transcranial direct current stimulation over the orbitofrontal cortex improves confidence but impairs metacognitive sensitivity during a custom-made perceptual decision-making task

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Introduction:

Despite advances in imaging and lesion studies, the neural underpinnings of metacognition, i.e., the ability to evaluate and regulate one's own cognitive processes, remain poorly understood. Given its involvement in reward processing, error detection, and self-monitoring, the orbitofrontal cortex (OFC) has been proposed as a potential substrate for metacognitive processing. Hence, this study investigates the role of the OFC in metacognitive sensitivity using a transcranial direct current stimulation (tDCS) approach.

Methods:

Twenty participants completed two sessions in a double-blind, within-subject design. Each session involved tDCS (anodal or sham) over the left OFC while participants performed a two-alternative forced-choice task with the addition of confidence ratings. Prior to stimulation, subjects also completed the Metacognitions Questionnaire-30 and a delay discounting task. Order of stimulation was counterbalanced, and participants did not report sensory differences between conditions.

Results:

Anodal stimulation significantly reduced metacognitive sensitivity without affecting perceptual decision-making accuracy and increased mean confidence ratings. Correlation analysis showed that metacognitive sensitivity under real stimulation was associated with negative beliefs about thinking. No significant correlation was found between metacognitive sensitivity and delay discounting under either stimulation condition.

Conclusions:

Findings support the involvement of the OFC in second-order retrospective judgments rather than perceptual decision-making accuracy. These results suggest that OFC overactivation may impair one's ability to assess the reliability of their own thoughts, with implications for psychiatric conditions such as obsessive-compulsive disorder. However, due to limitations including a small sample size and the custom-made task design, future studies should expand on the neural networks underlying metacognition.

If you're submitting a symposium talk, what's the symposium title?:

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 961

Enhancing Assessment Practices: A Validation Study of a Novel Phonological Short-Term Memory Task

Author: Daphne Gasparre¹

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The development of new neuropsychological tools reflects the need to update traditional assessment methods by incorporating screening of sensory requirements, consistent computer-based procedures and open access practices. These advancements are examined through the Italian standardization and validation of a new task designed to measure phonological working memory abilities, which play a crucial role in neuropsychological assessment. The most widely used tests present limitations, which may be addressed by adopting a new version of the Digit Span Test and the first version of the Bisyllabic Nonword Span Test. We aimed to provide a preliminary validation of these two newly developed tools, hypothesizing lower performance on the Bisyllabic Nonword Span Test, forward and backward tasks, compared to the Digit Span Test, and reduced scores in MCI patients versus those with subjective cognitive complaints. We collected data from a prodromic sample (MMSE $\geq$ 18). All participants underwent an anamnestic interview and comprehensive neuropsychological assessment including the Cognitive Reserve Questionnaire. Participants who were unable to repeat the spoken number or nonword correctly in the preliminary phases of the two tests were excluded. All statistical analyses were conducted through JASP version 0.19.3.0. Our analysis revealed significant differences between tests: performances on the Bisyllabic Nonword Span Test were lower than on the Digit Span Test, suggesting that the former might be more sensitive in identifying working memory impairments. These findings show that standardized procedures enable more reliable

measurements and support the clinical potential of this new task, highlighting the importance of integrating computer-based procedures into neuropsychological assessment.

If you're submitting a symposium talk, what's the symposium title?:

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science

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Yes

Old and new perspectives on the study of human memory / 597

How morality shapes our memory: a cross-cultural study on past and future (im)moral actions

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Autobiographical memory can be distorted, supporting the maintenance of a positive self-image (e.g., self-enhancement concept; Conway & Pleydell-Pearce, 2000). In this line, preliminary evidence has shown that memories of immoral actions can be characterized by distortions (e.g., less details or being blurry) and elicit a so-called “immoral amnesia” that may also be one of the underlying mechanisms of persisting immoral behavior (e.g., Kouchaki & Gino, 2016). Moreover, the concept of morality has been shown to be closely linked to cultural aspects and subsequently, to differ between different cultures (e.g., Rhim et al., 2020). The present study investigates the role of morality in autobiographical memory by adopting, for the first time, a cross-cultural perspective, and investigating immoral amnesia for both past and future personal (im)moral actions. More specifically, memories of British and Turkish participants ($N = 60$) are compared regarding their phenomenological characteristics (i.e., sensory-perceptual details and cognitive feelings). Our results confirm overall lower vividness for immoral actions and more interestingly, suggest that sensory-perceptual details (e.g., vividness) do not differ between the two cultures whilst cognitive feelings (such as perceived distance to the action or the feeling of responsibility) show different patterns in the two samples. Our findings confirm how morality can shape autobiographical memory characteristics, and, although the small sample size warrants caution, suggest how morality-linked findings can be culture-dependent. This underscores the importance of cross-cultural research in autobiographical memory.

If you're submitting a symposium talk, what's the symposium title?:

Old and new perspectives on the study of human memory

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Yes

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 874

Prosopagnosia: the Italian validation of a novel comprehensive assessment battery

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Prosopagnosia is a condition characterized by difficulties in face recognition, in the absence of agnosia and memory impairments. So far, no normative data are available for the Italian population allowing its comprehensive assessment. This work aims to standardize and provide normative data, reliability and validity of a prosopagnosia battery.

The latter was developed considering other factors that affect face recognition, including the autism traits, mood, subjective cognitive decline and general cognitive functioning. An assessment of cognitive reserve is also included. One-hundred-twenty healthy Italian participants (ranging from 20 to 80 years old) completed the battery comprising Prosopagnosia Index-20 (PI-20) a questionnaire assessing self-reported difficulties in face recognition and 4 computer-based tests: i) the Famous Face Test (FFT), in which participants have to recognize and identify 100 famous and non-famous faces; ii) the Oxford Face Memory Test (OFMT), in which participants have to judge whether two faces belong to the same or a different person; iii) and iv) the Cambridge Face Memory Test (CFMT) and the Cambridge Car Memory Test (CCMT), in which participants have to learn and recognize six faces/cars, respectively.

Preliminary results underline the reliability and the validity of the tests and the role of sex and age in face processing abilities, consistent with the existing literature on the assessment of prosopagnosia. Conversely, education does not seem to play a role. Accordingly, normative data for each test and subscore are provided. This battery could strongly improve the standardized assessment of different forms of prosopagnosia in research and clinical practice.

If you're submitting a symposium talk, what's the symposium title?:

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science

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Yes

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile / 764

INVECCHIAMENTO ATTIVO E SOLITUDINE: UNA SFIDA BIO-PSICO-SOCIO-DIGITALE

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L'invecchiamento della popolazione impone una ridefinizione delle strategie di prevenzione e promozione della salute. La solitudine è riconosciuta come un acceleratore della vulnerabilità neurocognitiva e della fragilità fisica, sottolineando l'urgenza di interventi preventivi (Livingston et al., 2020; Donovan & Blazer, 2020; Cacioppo & Cacioppo, 2018).

Adottando una prospettiva bio-psico-sociale, il presente contributo esplora il ruolo delle tecnologie digitali nella prevenzione primaria del declino cognitivo. Una revisione narrativa (Cornacchia et al.,

under review) ha evidenziato come le soluzioni digitali siano prevalentemente orientate alla valutazione di domini cognitivi tradizionali, con scarsa integrazione sistematica di indicatori sociali nei protocolli di screening. Una meta-analisi (Bonvino et al., under review) ha valutato l'accuratezza diagnostica degli strumenti digitali per l'identificazione precoce del Mild Cognitive Impairment (MCI), riportando una sensibilità di 0.808 e una specificità di 0.795, con significativa eterogeneità per quest'ultima, in parte attribuita all'età anagrafica. L'assenza di misure sociali nei dataset analizzati suggerisce che variabili relazionali possano contribuire alla variabilità osservata.

Per indagare tali aspetti, è stato analizzato un campione di 666 anziani utilizzando lo status coniugale come indicatore di rischio relazionale. I soggetti cognitivamente sani ma soli non differivano significativamente dai MCI nelle performance esecutive ($p = 0.62$) ma mostravano prestazioni sovrapponibili ai pazienti con demenza nei compiti di intelligenza sociale ($p = 0.79$).

In risposta, è stato sviluppato E-MOVE, un sistema integrato di sensori (Fitbit) e app (Run2Cog) per il monitoraggio dinamico di performance cognitive e abitudini sociali, ponendosi come una risposta concreta alla nuova sfida bio-psico-socio-digitale.

If you're submitting a symposium talk, what's the symposium title?:

NEUROSCIENZE, AMBIENTE E GEROPSIKOLOGIA: SFIDE E SOLUZIONI PER L'INVECCHIAMENTO SOSTENIBILE

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia / 659

Modulare il Delay Discounting tramite interventi di stimolazione neuronale non-invasiva

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Corresponding Author: andre.hac@gmail.com

Il delay discounting (DD), ossia la tendenza a svalutare una ricompensa in funzione del ritardo nella sua fruizione, riveste un ruolo chiave non solo nelle decisioni economiche, ma è anche alterato in diverse patologie psichiatriche, tra cui disturbi da uso di sostanze, depressione maggiore e disturbo ossessivo-compulsivo. Tale natura transdiagnostica rende il DD un candidato ideale per lo sviluppo di interventi riabilitativi personalizzati.

Studi di neuroimaging e analisi di pazienti con lesioni cerebrali hanno mappato un ampio network fronto-striatale-limbico coinvolto nel DD, ma la precisa localizzazione e il contributo causale di regioni specifiche restano ancora incerti. Per colmare queste lacune, è necessario ricorrere a tecniche di neuromodulazione non invasiva (NIBS): la stimolazione transcranica a corrente diretta (tDCS) della corteccia orbitofrontale (OFC), con elettrodi posizionati in Fp1-Fp2, ha infatti ridotto in modo significativo i tassi di DD senza influire sulla Working Memory e indipendentemente dalle altre variabili di impulsività. Invece, protocolli di stimolazione magnetica transcranica (TMS) applicati alla corteccia dorsolaterale prefrontale in pazienti con dipendenze non hanno modificato il DD, pur evidenziando una correlazione tra craving e DD.

Questi risultati sottolineano l'OFC come target particolarmente promettente per la modulazione del DD e sollecitano future ricerche volte a tradurre tali evidenze in strategie cliniche efficaci.

If you're submitting a symposium talk, what's the symposium title?:

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

The Psychology of Space Exploration and Extreme Environments / 957**COGNITIVE AND PHYSICAL FATIGUE INDUCED BY MILITARY OPERATIONS IN ISOLATED AND COLD ENVIRONMENT (ICE)****Author:** Sara Spinabelli¹**Co-authors:** Borja Martinez Gonzalez²; Cristina Ranuncoli³; Lorenzo Elipanni¹; Samuele Marcora¹¹ *Alma Mater Studiorum Università di Bologna*² *Kent and Medway Medical School, University of Kent, United Kingdom*³ *Scuola Regionale dello Sport, CONI Valle d'Aosta***Corresponding Author:** sara.spinabelli2@unibo.it

Purpose. The Arctic environment is characterized by extreme stressors which can impair soldiers' cognitive and physical performance, particularly during military operations. This study sought to examine the effects of operating in ICE on cognitive and physical fatigue in alpine soldiers.

Methods. 36 Alpine Corps soldiers underwent testing before, during, and after a three-days simulated military operation on Mont Blanc (3375m). Additional testing occurred at 551m, four days before and fourteen days after the operation. Soldiers were divided into three groups based on their mountain warfare experience and operational role. Daily testing occurred before and after the military operation, which included trekking and survival tasks. Pre-operation measures included Groningen Sleep Quality and Fatigue scales, a 5-min psychomotor vigilance task (PVT), and a 5-min step test. Post-operation measures repeated the PVT and step test. They also rated perceived exertion (sessionRPE) and workload (NASA-TLX) during the operation, and the subjective change in fatigue (Fatigability scale). Mixed Models tested effects of Group, Day, and Time ($p < 0.05$).

Results. Cognitive performance deteriorated significantly after operating on the first day in ICE ($p < 0.05$), indicating acute cognitive fatigability. Military training was perceived as more mentally and physically demanding in ICE as fatigue, fatigability, NASA-TLX variables and sRPE significantly deteriorated ($p < 0.05$).

Conclusions. Even specialized alpine soldiers experienced notable cognitive and physical impairments in ICE. The interaction between military operation and ICE significantly decreased cognitive performance, particularly on the first day. These findings highlight the need for countermeasures to mitigate the effects of ICE on soldiers' cognitive and physical fatigue, particularly during the initial phase of the exposure.

If you're submitting a symposium talk, what's the symposium title?:

The Psychology of Space Exploration and Extreme Environments

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Old and new perspectives on the study of human memory / 595**“Phantom echoes”: The role of acoustic and linguistic similarity in false memories as assessed by the DRM Paradigm****Authors:** Carlotta Lega¹; Francesca Maria Rodio²; Laura Ferreri³; Luca Rinaldi¹; Marco Petilli⁴¹ *University of Pavia*² *IUSS - Istituto Universitario di Studi Superiori Pavia*

³ *Università degli Studi di Pavia*

⁴ *Università degli Studi Milano-Bicocca*

Corresponding Author: francesca.rodio@iusspavia.it

The Deese-Roediger-McDermott (DRM) paradigm has always been a reliable and versatile tool to investigate the phenomenon of false memories in a laboratory setting.

Originally structured using linguistic stimuli, in this paradigm participants are generally asked to memorize a series of lists of words and then to recognize them among newly presented items. False recognitions frequently occur in this phase, as a function of the semantic similarity between the words encoded and the new items.

Recently, this paradigm has been employed with different types of stimuli, such as images. These new approaches have shown that also the visual similarity between stimuli could elicit false memories.

Based on these findings, this work proposes a DRM paradigm using environmental sounds as stimuli to probe the presence of false memories in the auditory modality. To do so, we leverage a data-driven and computational model (i.e., a convolutional neural network) to quantitatively estimate the acoustic similarity between different sounds, starting from an initial pool of two millions of sounds extracted from the Audioset database.

Our preliminary results show that false memories in the recognition phase increase for those acoustic stimuli estimated as more similar to the ones presented during the encoding phase. These findings suggest that the acoustic similarity may be a key factor in false memories formation, even in cases where speech sounds are not involved.

If you're submitting a symposium talk, what's the symposium title?:

Old and new perspectives on the study of human memory

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

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Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 898

Digital Cognitive Screening Tools to Bridge Linguistic and Cultural Gaps

Authors: Francesco Giaquinto¹; Maria Ines Pasanisi¹; Alessandra Papadia¹; Sara Asseconi²; Giuliana Leccese¹; Daniele Romano³; Paola Angelelli¹

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Introduction. Digital cognitive tools offer promising opportunities for first-level assessment of cognitive abilities, especially in primary care. This study had two aims: (1) to systematically review touchscreen-based tools validated for cognitive assessment in older adults in primary care; and (2) to present normative data for the Italian version of the Self-Administered Tasks Uncovering Risk of Neurodegeneration (SATURN), addressing the lack of validated tools in Italy.

Methods. The review followed PRISMA guidelines and included studies reporting touchscreen tools suitable for first-level cognitive assessment in primary care. SATURN was validated in an Italian sample (N = 323; mean age = 61.33; mean education = 11.32 years; 180 females) using the Capitani and Laiacina method. It was administered via PsychoPy and compared with MMSE and MoCA.

Results. The review identified 42 studies on 30 tools. Most tools showed variability in theoretical models, clinical validity, and practical application. Only 7 tools were validated in multiple languages, and none in Italian. The SATURN Italian normative study showed significant correlations with MMSE and MoCA. Mean administration time was 6.72 ± 3.24 minutes. Accuracy was influenced by age and education; time-on-task was affected by sex. Adjusted scores, tolerance limits, and

correction grids were computed.

Discussion. Digital tools can support early cognitive screening in primary care, but must be easy to use and culturally adaptable. SATURN, the first open-source tool validated in Italian, is promising for both self-administered and remote assessment. Further studies should assess its diagnostic accuracy.

If you're submitting a symposium talk, what's the symposium title?:

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile / 685

Tecnologia embodied e intelligenza artificiale a supporto della prevenzione del declino cognitivo: il progetto E-Move

Authors: Roberta Simeoli¹; Elena Lupi¹; Andrea Mennitto²; Davide Marocco¹

¹ *Federico II University of Naples*

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L'invecchiamento della popolazione rappresenta una delle sfide più complesse per le società moderna, con profonde implicazioni per la pianificazione e l'erogazione dei servizi sanitari e sociali. In questo contesto, la diagnosi precoce dei Disturbi Neurocognitivi (NCD), come il Mild Cognitive Impairment (MCI), è diventata una priorità per contenere l'impatto della neurodegenerazione e garantire interventi tempestivi ed efficaci (Mancioppi et al., 2019).

In questo contesto nasce il progetto E-Move-Continuous embodied monitoring system for healthy ageing assessment and support, una piattaforma digitale integrata e sostenibile che combina intelligenza artificiale (AI), machine learning (ML) e tecnologie indossabili per lo screening precoce e il monitoraggio continuo dei NCD. Il sistema raccoglie in modo automatico e sicuro dati eterogenei: indicatori fisiologici, pattern motori e cognitivi, tramite sensori inerziali, dispositivi mobili (smartwatch, smartphone, tablet) e valutazioni neuropsicologiche digitalizzate sotto forma di serious games.

L'integrazione tra tecnologie embodied e algoritmi intelligenti consente di rilevare precocemente alterazioni nei movimenti e nei comportamenti cognitivi spaziali, elementi chiave nella previsione e comprensione del decorso del MCI (Al-Hammadi et al., 2024; Tuena et al., 2021). Inoltre, E-Move risponde ai bisogni rilevati tra i professionisti sanitari, offrendo uno strumento ecologico, accessibile e facilmente integrabile nella pratica clinica quotidiana.

La piattaforma si configura, pertanto, come una risposta concreta alle esigenze emergenti nel campo della diagnosi e della gestione dei NCD, promuovendo una sanità predittiva, preventiva e personalizzata, capace di sostenere condizioni di salute prima della comparsa di disabilità, in un'ottica di sostenibilità e accessibilità per i sistemi sanitari del futuro.

If you're submitting a symposium talk, what's the symposium title?:

Neuroscienze, ambiente e geropsicologia: sfide e soluzioni per l'invecchiamento sostenibile

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia / 827

Combinare stimolazione transcranica a corrente continua con un intervento psicoterapeutico: evidenze da due campioni sperimentali

Author: Anna Vedani¹

Co-authors: Alessandra Vergallito²; Giandomenico Schiena³; Eleonora Maggioni⁴; Maria Gazzotti⁵; Benedetta Visiello⁵; Gabriele Caselli⁶; Giovanni Maria Ruggiero⁷; Sandra Sassaroli⁷; Paolo Brambilla⁸; Leonor J Romero Lauro²

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⁸ *Department of Pathophysiology and Transplantation, University of Milan, Milan, Italy; Department of Neurosciences and Mental Health, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy*

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Introduzione: La combinazione di interventi cognitivi o comportamentali con la stimolazione cerebrale ha mostrato risultati promettenti, sebbene preliminari. In questo progetto abbiamo combinato la terapia metacognitiva (MCT), un approccio psicoterapeutico cognitivo-comportamentale di terza generazione, con la stimolazione transcranica a corrente continua (tDCS) in due campioni sperimentali: (i) diagnosi di disturbo depressivo maggiore, (ii) subclinico con ansia elevata. Entrambi i gruppi presentano uno stile di pensiero disfunzionale, caratterizzato da pensieri negativi ripetitivi e ricorrenti, noto come pensiero ripetitivo negativo, che contribuisce all'emergere e al mantenimento della psicopatologia e che rappresenta il target della MCT.

Metodi: I partecipanti (54+44) hanno preso parte ad un intervento di otto settimane con una seduta settimanale di MCT/colloquio psicologico e 14 sessioni di tDCS reale/sham (tre/settimana per 3 settimane, 1/settimana per le altre 5). La tDCS (20 minuti, anodo sulla corteccia prefrontale dorsolaterale sinistra) era somministrata durante il training attentivo, un esercizio centrale della MCT. Questionari self-report misuravano sintomi clinici (ansia e depressione) e processi del RNT (rimuginio e ruminazione) pre- e post-trattamento, e in quattro follow-up distribuiti tra due settimane e un anno post-intervento.

Risultati: Le analisi hanno mostrato una riduzione dei sintomi post-trattamento, con effetti della tDCS che non emergono immediatamente dopo la fine del trattamento ma nei follow-up successivi.

Conclusioni: I risultati confermano l'efficacia della MCT come intervento transdiagnostico e la possibilità di combinarla con la tDCS per potenziarne l'effetto a lungo termine, incoraggiando ricerche future a esplorare e migliorare l'utilizzo della stimolazione cerebrale come un intervento coadiuvante per promuovere cambiamenti psicologici stabili.

If you're submitting a symposium talk, what's the symposium title?:

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

The Psychology of Space Exploration and Extreme Environments / 950**Cognitive changes induced by microgravity during parabolic flights**

Authors: Raffaella Ricci¹; Roberto Gammeri¹; Emanuele Cirillo¹; Stefano T Chiadò²; Claudio Zavattaro³; Hilary Serra³; Samuel Cento¹; Anna Berti¹; Adriana Salatino⁴

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Clarifying the cognitive effects of microgravity is essential for ensuring optimal human performance during future long-duration space and interplanetary missions. Given the limited opportunities for spaceflights, the high cost, and the long-time intervals between launches, terrestrial analogs such as parabolic flight (PF) offer a valuable alternative for controlled experiments.

During four ESA PF campaigns, we investigated the impact of microgravity on two cognitive functions: (1) visuospatial attention (Study 1, using the Posner spatial cueing task) and (2) motor awareness (Study 2; see Salatino et al., 2023 for task details). Participants performed cognitive tasks at 1g before flight (PRE), at 0g (0G) and 1g (1G) during flight, and again at 1g after flight (POST). Stress/arousal levels were monitored through physiological markers.

In Study 1, microgravity enhanced stimulus-driven attentional capture ($p < 0.001$) and impaired voluntary attention control ($p = 0.006$). In Study 2, motor awareness was significantly reduced under microgravity conditions ($p < 0.001$). Notably, these cognitive changes were not attributable to changes in physiological arousal.

These findings highlight the effectiveness of PF as a reliable analog for studying the cognitive impacts of microgravity. The results have significant implications for designing countermeasures to support astronaut performance during space missions and offer promising applications for Earth-based rehabilitation of vestibular and sensorimotor dysfunction.

If you're submitting a symposium talk, what's the symposium title?:

The Psychology of Space Exploration and Extreme Environments

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

No

Old and new perspectives on the study of human memory / 576**False memories from nowhere: humans falsely recognize words that are not attested in their vocabulary**

Author: Daniele Gatti¹

Co-authors: Michela Marchetti ²; Giuliana Mazzoni ²; Marco Marelli ³

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Semantic knowledge plays an active role in many well-known false memory phenomena, including those emerging from the Deese–Roediger–McDermott (DRM) task. In this experimental paradigm,

indeed, humans tend to falsely recognize newly presented words via activation of other previously shown stimuli. In the present study we aimed to test what happens in cases in which no apparent prior semantic knowledge is available, like in the case of entirely novel lexical stimuli. To do so, we evaluated semantic similarity effects in a DRM task with lists entirely composed by pseudowords (or “novel words,” i.e., letter strings resembling real words but lacking assigned meanings). Semantic similarity between pseudowords were established through a distributional semantic model able to represent in a vector space, not only attested words but also unmapped strings as bags of character n-grams. Participants were instructed to memorize those lists and then to perform a recognition task. Results showed that participants false and veridical recognition increased with increasing semantic similarity between each stimulus and the stimuli comprising its list, as estimated by the distributional model. These findings extend previous evidence indicating that humans are sensitive to the semantic (distributional) patterns elicited by novel words by showing that this sensitivity can even induce humans to falsely recognize stimuli that they have never encountered in their entire lives.

If you're submitting a symposium talk, what's the symposium title?:

Old and new perspectives on the study of human memory

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?:

Yes

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 914

The Advent of Digital Assessment Tools: A New Era in Neuropsychological Evaluation

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Neurodegenerative diseases represent one of the most significant challenges of healthcare systems, with implications for patients, caregivers, and society. Nowadays there are no definitive cures available, and early symptom recognition is essential to enable timely intervention and slow disease progression. However, traditional diagnostic methods are often complex, time and resource intensive, and insufficiently sensitive to early-stage symptoms. To address these limitations, we propose an innovative approach combining the digitization of clinically validated neuropsychological assessments with the integration of technological devices. This system enables noninvasive standardization of procedures, reduces human error through automated response recording, minimizes transcription and interpretation biases, decreases inter-operator variability, and supports objective, longitudinal assessments. The evaluation of the system's usability was a crucial element in ensuring its effectiveness in real clinical settings. To this end, a laboratory study was conducted with real users to examine the ease of use and the integration of the system into everyday clinical practices. Results demonstrated good overall usability and participants found the system intuitive and judged it to be easily integrable into clinical settings.

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Discussione e conclusioni

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Old and new perspectives on the study of human memory / 1029

Question time

Verso un approccio transdiagnostico: integrazione tra psicologia sperimentale, neuroscienze e pratica clinica nello studio della psicopatologia / 1045

Questions and Discussion

Rethinking the Future of Cognitive Testing: When Tradition Meets Innovation, Technology, and Open Science / 1038

Open discussion e chiusura

The Psychology of Space Exploration and Extreme Environments / 1041

Open Discussion

Methodology 1 / 510

Emotional Well-Being and Academic Self-Efficacy in Adolescents: The Role of Socioeconomic Status

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Adolescents from disadvantaged backgrounds often face greater challenges in maintaining psychological well-being at school. Within the school context, academic self-efficacy (ASE), defined as students' belief in their ability to manage learning tasks, has been shown to foster adaptive emotional functioning, promoting positive emotions and protecting against negative ones. However, the extent to which this protective role of ASE might vary based on socioeconomic status (SES) or immigrant background remains underexplored. This study examined whether the relationship between ASE and emotional well-being, measured through positive and negative affect, differs according to students' SES and immigrant background. Data were drawn from a nationally representative sample of 26,564 10th-grade students attending Italian high schools. ASE, positive affect, and negative affect were assessed using already validated self-report instruments. A Multigroup Structural Equation Modeling approach was applied to test the moderating roles of SES (low, middle, high) and immigrant status (native, first-generation, second-generation immigrants). Results showed that ASE significantly predicted higher positive affect ($\beta = 0.34$, $p < .001$) and lower negative affect ($\beta = -0.17$, $p < .001$) across the entire sample. However, no significant moderation effects were found: the strength of these associations did not vary across SES or immigrant background. These findings underscore the robustness of ASE as a protective factor for emotional well-being, even among students facing socio-economic disadvantages. The current results highlight the importance of school-based interventions aimed at fostering students' self-efficacy beliefs, which may serve as a key factor for promoting emotional resilience across diverse adolescent populations.

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Lunch and poster 2 / 635

A TMS investigation of the causal role of STS and the cerebellum in the gaze cueing task

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Eye gaze is a salient social cue we efficiently process and attend to when encountering a face. A rich body of neuroimaging evidence shows that attention toward others' gaze is supported by a complex network that includes face-processing regions and the social brain (e.g., Superior Temporal Sulcus). In the present study, we used for the first time Transcranial Magnetic Stimulation (TMS) to investigate whether STS is causally involved in social attention. Furthermore, we tested whether the cerebellum also plays a role in it. The cerebellum has recently been recognized as a critical component of the social brain, and its activation is repeatedly associated with the processing of biological stimuli, such as body movements. Therefore, the cerebellum might represent, in addition to STS, another relevant structure supporting social attention. In two experiments, participants performed a cueing task that consisted of localizing the position of an object that could be congruent or incongruent with the direction of the cue (eye gaze or arrow) with SOAs of 200 and 700 msec while TMS was delivered over STS, the cerebellum and the vertex (control site). Overall, our results point to a complex contribution of cerebro-cerebellar network in supporting social attention.

Keywords: gaze perception; attention; transcranial magnetic stimulation; social cognition

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