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An Integrated Approach of Video Game Therapy®: A Case Study

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Abstract: International literature in the field of rehabilitation and psychological support is increasingly characterized by the inclusion and use of video games and virtual media, even if the results are controversial. The theoretical basis on which the study presented is based is Video Game Therapy®. This approach uses commercial video games, which are generally free or available at a relatively low cost. These games possess many essential functions that make them practical as preventive tools or support for integration into traditional therapies. Video Game Therapy® allows the patient to reflect on emotional containment and cognitive self-regulation to establish a state of mental balance and well-being. It encourages insight and leads the player to reflect on some salient aspects of their character and lifestyle and their emotions and thoughts linked to specific life episodes relived in the game setting. Starting from these premises, the study shows promising results, presenting a single case of a boy with social isolation problems and relational difficulties, in which significant changes were highlighted in the perception, expression, and management of emotions, as well as in metacognition and self-efficacy.

Keywords: Video Game Therapy®; social isolation; NEET

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1. Introduction

Video games have evolved into a diverse form of interactive digital entertainment with various applications in today's society. They provide entertainment and leisure and serve as powerful tools for education, training, and simulation. In educational settings, video games not only enhance learning outcomes and promote problem-solving skills, but they also create deeply immersive experiences, engaging the audience in a unique way. They are also used in professional training across fields such as healthcare and military exercises, where they help improve skills and decision-making in high-stress situations. Additionally, video games offer a platform for social interaction, connecting individuals worldwide through massive online communities. In the healthcare sector, they are utilized for therapeutic purposes, assisting with physical rehabilitation and cognitive treatments [1,2].

1.1. Video Game Therapy®

Video Game Therapy® [3] (VGT) draws inspiration from Geek Therapy [4], classic psychodrama [5], and Adlerian individual psychoanalytic therapy.

VGT® is a tool used in clinical and therapeutic settings to enable emotional containment, support, and expressive work to improve emotional regulation [6].

Together with serious games (SGs), commercial video games are increasingly used to improve and rehabilitate patients with different pathologies [7–10].

In particular, the most recent literature, as reported by Bocci and colleagues (2023), highlights the potential of video games in the rehabilitation therapy of brain injuries and trauma [11], neurodegenerative disorders [12], specific learning attention disorders [13], attention deficit hyperactivity disorder [14–16], and even to prevent the cognitive decline due to physiological aging [17].

However, benefits do not seem limited to cognitive aspects, as more and more studies underline the potential of video games, even in the case of psychiatric pathologies and psychopathologies. Bocci and colleagues [6] state that Video Game Therapy® and the actions/behaviors implemented in a session with video games allow patients to express themselves in a protected and fun environment, which helps the therapist better understand their emotional state.

In VGT®, commercial video games are assumed to explore various aspects of an individual's emotions, thoughts, and lifestyle that emerge within the virtual world of games. This highly versatile and adaptable approach can be administered to patients of different age groups and with other diagnoses [6].

VGT® not only enhances skills inherent to the digital world but stimulates various cognitive and relational processes that tend to be generalized to the individual and relational contexts of our daily lives [6].

Furthermore, Bocci and colleagues [6] focus on the two fundamental aspects of VGT®: the flow [18] "optimal experience", and the relational setting.

The immersive properties of video games facilitate flow. This experience happens when there is a balance between the challenges and the objectives that the game requires. Consequently, the two hemispheres of the player are in balance concerning the challenges and objectives that the game requires [3]; furthermore, the relational setting is possible because the therapy takes place in a couple or in a group, a setting in which it is possible to have active listening, free associations, exposure to stimulus, catharsis, and desensitization concerning a traumatic memory/event. For this reason, the focus in VGT® is not only on the video game's content but also on the "how" and "the way" in which the therapist proposes it and acts on it in the session [3]. In the dialogic mode (applied to the study presented), after the subject has reached the state of flow, the dialogic interview can be used, focusing both on the cognitive aspect (skill training) and the ease of the insight processes (catharsis, exposure, desensitization, etc.) activating dynamics of metacognition and mentalization. Here, the therapist collects all the moments of pleasure that the gamer has experienced in certain moments of the game, their worries and, therefore, those thoughts/images that represent real "lifelines" for them (people, places, situations, etc.).

Please refer to the article by Bocci and colleagues [6] for a detailed description of the therapeutic process and stages of VGT®.

1.2. Video Game Therapy® and Social Isolation (Not in Education, Employment, or Training "NEET")

Social isolation is the lack of social connection, described as the inadequate quality and quantity of social relationships with other people at the different levels where human interaction occurs in the individual, group, community, and broader social environment [19], and it predicts cognitive decline and mortality among individuals over 60 [20].

The pain associated with subjective isolation manifests itself through surprising physiological and behavioral discomforts: research shows that chronic feelings of social isolation can trigger a series of physiological health risk events, equal to factors such as hypertension, lack of physical activity, obesity, or smoking, and can accelerate the aging process [21].

Social isolation is correlated with mental health problems, including an increased risk of depression, cognitive impairment, anxiety, and substance abuse [22].

The literature reveals that children and adolescents who receive adequate social support can cope more effectively with high-stress levels and possess greater mastery and ability to handle negative emotions, significantly improving quality of life [23].

On average, 12.8% of youth aged between 15 and 29 in the Organisation for Economic Cooperation and Development countries are not in education, employment, or training (NEET).

According to a recent literature review [24], considering the latest available data, the data reported by Eurostat and the national statistical institutes of the EU, the total NEET rate in Italy in 2021 (15–29 age) was 23.1% (21.2% males).

Istat reports that in Italy, the percentage of NEETs among individuals aged 15 to 34 was 18% in 2023 and is projected to decrease slightly to 17.5% in 2024. Additionally, Istat estimates that around 60,000 young people have voluntarily isolated themselves and choose to live indoors.

NEETs feel hampered by their low skill levels and are discouraged about their future economic prospects. Compared to their peers, NEET youths are also contending with substantial mental health problems, including depression, anxiety, substance abuse, and aggression control [25].

Recent literature studies (i.e., [23]) underline that in the case of unemployed young adults, NEETs, it is important to promote resilience, self-esteem, and self-efficacy to support them in daily life (for example, to face adversity in job searching).

Research indicates that soft skills play a crucial role in understanding the NEET phenomenon, although few studies have specifically focused on them. These skills are vital for adapting to daily life and succeeding in the job market. Among the essential soft skills, social/relational skills stand out. These include the ability to relate positively and appropriately to others, manage emotions, recognize feelings, and communicate effectively. These abilities are closely linked to the concepts of emotional intelligence and social competence [26].

However, NEETs' engagement paths often fail because they do not feel involved enough and tend to drop out. As stated by Straand and colleagues [27] and highlighted by Bocci and colleagues [6], video games could be an approach to overcoming these relational and emotional challenges. In fact, socially isolated young people and NEETs often find themselves spending countless hours isolated at home or in their rooms, immersed in video games. To effectively engage this demographic, it is essential to use tools that resonate with their interests and experiences. Research strongly supports the idea that incorporating video games into programs designed to enhance cognitive and relational skills can be very beneficial. By making apps more visual and interactive, we can significantly boost engagement and motivation among these young individuals [23]. That is why captivating and immersive commercial video games are implemented in VGT® [4].

1.3. Aims

Soft skills enable individuals to develop versatile and positive behaviors, contributing to their overall well-being and quality of life [28]. Therefore, it is crucial to enhance soft skills and raise young people's awareness of them while also fostering metacognitive skills. Starting from these premises, the project aims to improve relational skills of recognition, expression, management of emotions, self-efficacy, and metacognitive abilities through the unique and innovative therapeutic approach of Video Game Therapy® in socially isolated adolescents and young adults or NEETs, confirming its effectiveness and usability.

Specifically, the study presented aims to verify in a boy with relational and social isolation difficulties whether Video Game Therapy® can improve the ability to recog-

nize and manage emotions and perceived self-efficacy and confirm its effectiveness and usability [26].

2. Material and Method

2.1. Participants

The project involved young people between 17 and 30 who presented with problems of social isolation and relational difficulties.

Exclusion criteria: Diagnoses of autism spectrum disorder, psychopharmacological therapies, and language difficulties (reading, comprehension, articulation, expression, and writing).

From an initial sample of 20 possible participants, 5 withdrew during the preliminary assessment; the other 15 were administered the abbreviated scales of the Adlerian complex of inferiority (COMPIN) (see Section 2.2 for details) and superiority (SUCOMP) [29], translated into Italian, on experiences of inferiority. In line with the aims of the study, we consider only COMPIN scores. Specifically, from this questionnaire (COMPIN), the subjects with the most critical scores (average at this scale greater than or equal to 3) and the most dystonic experiences were chosen among those of room isolation, social isolation, etc. VGT® was then proposed to these young people. Only one of the boys decided to participate in the project voluntarily.

A. is an 18-year-old South American who moved to Italy in 2021 and has a good command of the Italian language. At the time of his recruitment, he was not in school and had no job.

A. participated in the game sessions and agreed to take part in the two proposed games. The relationship with the therapist supervising the gaming sessions was also excellent. Although there was an initial lack of interactivity, we engaged in various communicative exchanges that were appropriate for the context.

2.2. Assessment Instruments

For the assessment, the following tools were administered:

Symptom Checklist-90 (SCL-90) [30]: The SCL-90 test is a self-administered questionnaire of 90 items on a 5-step Likert scale. The test presents items on disturbances possibly experienced during the last week; the subject gives a rating from 0 (not at all) to 4 (very much). Ten symptom dimensions in the scale are somatization (SOM) (e.g., "Feeling faint or dizzy"); obsession-compulsion (O-C) (e.g., "Inability to ward off unwanted thoughts, words or ideas"); interpersonal sensitivity (INT) (e.g., "Feeling intimidated towards the opposite sex"); depression (DEP) (e.g., "Loss of sexual interest or pleasure"); anxiety (ANX) (e.g., "Nervousness or internal agitation"); hostility (HOS) (e.g., "Uncontrollable outbursts of anger"); phobic anxiety (PHOB) (e.g., "Fear of open spaces or streets"); paranoid ideation (PAR) (e.g., "Conviction that others are responsible for your disturbances"); psychoticism (PSY) (e.g., "Conviction that others can control your thoughts"); and sleep disturbance (SLEEP) (e.g., "Restless or disturbed sleep").

Toronto Alexithymia Scale (TAS-20) [31]: The TAS-20 is a self-administered scale based on a 5-step Likert scale (1 = "not at all agree; 5 = "completely agree") consisting of 20 items that measure the level of alexithymia. A score greater than or equal to 61 indicates alexithymia, while a score below 52 indicates a non-alexithymic subject. Scores between 52 and 60 are considered in the intermediate range. This straightforward scoring criteria allows for the precise assessment of emotional intelligence.

Metacognition Questionnaire (MCQ-30) [32]: MCQ-30 is a shortened version of the original MCQ [33]. The thirty-item questionnaire addresses people's beliefs about their thoughts and assesses individual differences in five factors important in the metacognitive

model of psychological disorders. The five subscales in the questionnaire are cognitive confidence, positive beliefs about anxiety, cognitive self-awareness, negative beliefs about the inability to control thoughts and danger, and beliefs about the need to control thoughts.

Adlerian Inferiority Complex Shortened Scales (Compin) [29]: This is a 10-item scale on a 5-step Likert scale. This scale measures the feeling of inferiority answering the question: "When I do something, it's important to me to be the best and I mostly manage to be that. . ." (i.e., my way of thinking is very original).

Flow State Scale (FSS) [34]: FSS is a 36-item self-administered scale on a 5-step Likert scale (1 = "totally disagree"; 5 = "totally agree"). It identifies nine subscales that correspond to the nine fundamental dimensions of flow. The flow scale will not be taken into consideration in our case study's preliminary analysis.

Emotional Intelligence Scale (EIS) [35]. EIS is a scale consisting of thirty-three items used to measure general emotional intelligence on a 5-step Likert scale (1 = "strongly disagree", 5 = "strongly agree"). This is described as an individual's ability to recognize, discriminate, properly label, and manage their emotions and those of others to achieve specific goals. The scale consists of four subscales that measure perception of emotions, use of emotions, management of emotions relevant to self, and management of the emotions of others.

Self-Efficacy: The Perceived Self-Efficacy Scale in the Expression of Positive Emotions [36] consists of seven items and analyzes beliefs about managing and effectively expressing positive emotions.

The Perceived Social Self-Efficacy Scale [36] comprises 15 items. It evaluates an individual's confidence in their ability to take initiative, adapt to new social situations, express their points of view and opinions, and integrate effectively into a social group.

The Perceived Empathic Self-Efficacy Scale [36] consists of 12 items. It evaluates a person's confidence in their ability to feel empathy, understand others' moods, anticipate the need for help, and provide support in difficult moments.

All questionnaire items can be rated on a Likert scale from 1 (incapable) to 5 (completely capable). The higher the score, the greater the subject's self-efficacy in the area.

2.3. Procedure

For this study, Video Game Therapy® protocol was followed (see Figure 1 for procedure's details). After the participant signed the informed consent form, their history was collected (exclusion and inclusion criteria), and the pre-intervention (T0) assessment was conducted, during which the following scales were also administered: the Toronto Alexithymia Scale (TAS-20) [31], Symptom Checklist-90 (SCL-90) [30], Metacognition Questionnaire (MCQ-30) [32], EIS [35], Perceived Self-Efficacy Scale in the Expression of Positive Emotions, and Perceived Empathic Self-Efficacy Scale [36].

This assessment was followed by five game meetings and a mid-term assessment after the fifth meeting (T1) with the administration of the Symptom Checklist-90 (SCL-90) [30], Metacognition Questionnaire (MCQ-30) [32], EIS [35], Perceived Self-efficacy Scale, and Perceived Empathic Self-Efficacy Scale [36].

This mid-term evaluation was followed by five more play sessions ending with a post-intervention (T2) evaluation in which the Toronto Alexithymia Scale (TAS-20) [31], Symptom Checklist-90 (SCL-90) [30], Metacognition Questionnaire (MCQ-30) [32], EIS [35], Perceived Self-Efficacy Scale, and Perceived Empathic Self-Efficacy Scale [36] were administered.

Recognizing that alexithymia is unlikely to change swiftly, we chose to administer the TAS scale only at the beginning and at the conclusion of the study. This strategy optimizes our ability to identify any significant shifts in this value. In contrast, given that other psychological and behavioral measures can change more rapidly, we determined that

administering these related scales three times throughout the study would provide us with more comprehensive insights.

T0	GAME SESSIONS	T1	GAME SESSIONS	T2
Toronto Alexithymia Scale (TAS-20), Symptom Checklist-90 (SCL-90), Metacognition Questionnaire (MCQ-30), EIS, Perceived Self-efficacy Scale, and Perceived Empathic Self-Efficacy Scale	5 game sessions Unravel 2	Symptom Checklist-90 (SCL-90), Metacognition Questionnaire (MCQ-30), EIS, Perceived Self-efficacy Scale and Perceived Empathic Self-Efficacy Scale	5 game sessions Overcooked 2	Toronto Alexithymia Scale (TAS-20), Symptom Checklist-90 (SCL-90), Metacognition Questionnaire (MCQ-30), EIS, Perceived Self-efficacy Scale, and Perceived Empathic Self-Efficacy Scale

Figure 1. Procedure.

Each gaming session lasts 60 min. The sessions took place once a week for 10 weeks. Each encounter included 10 min of an arcade game to get into the flow, 50 min of playing Unravel 2 (for the first five encounters/days), and 50 min of playing Overcooked 2 (for the remaining encounters/days). After the initial 10 min and at the end of the session, the participant completed the Flow State Scale (FSS) [34].

Scores for FSS were not taken into consideration for this article.

The two games, Unravel 2 and Overcooked 2, were chosen based on their graphic and process characteristics; they were used to stimulate cognitive skills and processes (problem-solving, attention, decision-making) and narrative elements (projective identification, symbolic content referring to parts of the self). Video Game Therapy is an approach that integrates the cognitive dimension with the emotional dimension, performance with a sense of presence, and we tried to have elements concerning agency combined with more reflective and activating aspects of memory, sustained attention, and identification (being in the game).

Unravel 2 is a puzzle-platform video game developed by Swedish studio Coldwood Interactive. The game is structured with seven levels the player must complete to finish. During the gameplay, you have to collaborate to solve various puzzles and progress through the levels and game worlds by communicating with your partner and coordinating positioning within the game space. The game promotes problem-solving skills and creative thinking aimed at solving different types of collaborative puzzles and enhancing reaction speed.

Overcooked 2 is a chaotic co-op cooking game for 1–4 players in which you must serve a variety of recipes. More specifically, players must manage orders in a restaurant by dividing tasks such as preparing fifteen different dishes, timing the cooking, washing dishes, and serving tables. The gameplay helps develop skills such as time management, anxiety management, executive functions, effective communication, leadership, and the division and organization of roles within a team.

3. Statistical Methods and Results

The test results were analyzed by comparing the data collected at the three points—at the beginning (T0), middle (T1), and end (T2) of the therapy. The analyses were conducted using SPSS (version 19.0.1.0).

For all scales, we computed the Z score by subtracting the scale score from the normative mean score and divided the difference by the normative SD ($(X - Normative\ \overline{X})Normative\ SD$, where X = total scale score).

Normative data were taken from the respective scientific articles about each test concerning the Italian population: TAS-20 [37], MCQ [32], SCL [38], and Self-Efficacy [31].

The descriptive results obtained on the scales administered to A. are reported in Figure 1. The scales of alexithymia, metacognition, psychopathological state, and self-efficacy will be considered.

As for the FSS scales, it was not considered for this article.

3.1. Alexithymia

Regarding alexithymia, the TAS-20 scores [31,37] at T0 and T2 show an improvement.

The total score obtained decreased during therapy (T0 = 51 points (z = −0.03); T2 = 46 points (z = −0.47)). The final total score was below the cutoff of 52 points, indicating an absence of alexithymia. (See Table 1).

Table 1. A.'s scores averages at different timepoints (T0 = baseline; T1 = after 5 meetings; T2 = after 10 meetings from baseline) and averages of normative sample.

	Participant	**Normative**	
	Mean	Mean	SD
TAS_0	52.00	52.36	11.37
TAS_T2	46.00		
MCQ_Total T0	80.00	60.34	12.37
MCQ_Total T1	71.00		
MCQ_Total T2	74.00		
MCQ_CC T0	22.00	9.55	4.11
MCQ_CC T1	20.00		
MCQ_CC T2	19.00		
MCQ_CS T0	17.00	16.79	3.42
MCQ_CS T1	13.00		
MCQ_CS T2	14.00		
MCQ_NB T0	15.00	11.04	3.65
MCQ_NB T1	12.00		
MCQ_NB T2	11.00		
Self-efficacy emotion_T0	20.00	29.12	4.16
Self-efficacy emotion_T1	21.00		
Self-efficacy emotion_T2	21.00		

TAS = Toronto Alexithymia Scale; MCQ_CC = cognitive confidence; MCQ_CS = cognitive self-awareness; MCQ_NB = negative beliefs about the inability to control thoughts; Self-efficacy emotion = the Perceived Self-Efficacy Scale in the Expression of Positive Emotions. SD = standard deviation.

3.2. Metacognition

Regarding metacognition, measured using the self-report questionnaire, improvements in the total score and in the scales of cognitive confidence, cognitive self-awareness, and negative beliefs concerning the inability to control thoughts and danger were noted between the survey at T0 and the comparison with T2. Lower scores on the scale indicate higher awareness.

The total metacognition score at T0 was 80 points (z = 1.59); at T1, it was 71 points (z = 0.86); and at T2, the final score was 74 points (z = 1.10). Despite improvements, the score obtained was higher than the normative average of 60.34, with a standard deviation of 12.37.

The cognitive confidence score improved at T1 and T2. At T0, the total was 22 points (z = 3.02); at T1, the total was 20 points (z = 2.54); and at T2, the total was 19 points (z = 2.29). Again, the score obtained, despite improvements, was higher than the normative average of 9.55, with a standard deviation of 4.11. An improvement was also noted in cognitive self-awareness, where scores fell from an initial score of 17 points (z = 0.06) at T0, 13 points (z = −1.10) at T1, and 14 points (z = −0.81) at T2. In this case, the results obtained were lower than the normative average of 16.79 with a standard deviation of 3.42.

The last aspect related to metacognition that improved concerned negative beliefs about the inability to control thoughts and danger. At T0, the scale score was 15 points (z = 1.08); at T1, the score was 12 points (z = 0.26); and at T2, the score was 11 points (z = −0.01). The results obtained were slightly lower than the normative mean of 11.04, with a standard deviation of 3.65.

3.3. Investigation of Psychological and Psychopathological States

Considering the SCL-90 scale [30], we noted improvements in aspects of somatization and a trend of improvement in anxiety-related symptoms.

In particular, the somatization score decreased from 1.00 in the pre-intervention assessment to 0.917 at T2, falling below the outlined cutoff. Scores higher than one were indeed noteworthy.

The anxiety score, on the other hand, decreased from 0.90 in the pre-intervention assessment to 0.70 in the post-intervention evaluation. Again, scores higher than one were indeed noteworthy.

3.4. Self-Efficacy

The self-efficacy scales showed improvement in perceived self-efficacy [36] in expressing positive emotions (Figure 1). The scores on this scale increased from 20 (z = −2.19) at T0 to 21 (z = −1.95) in the assessment at T1 and T2.

No improvement emerged in the Perceived Empathic Self-Efficacy Scale and in the Perceived Social Self-Efficacy Scale [31].

4. Discussion

The study presented examines the therapeutic path of A., a young NEET, through a Video Game Therapy® program.

NEETs represent a category at risk of social exclusion and may show poor non-cognitive skills, such as relational, empathic, self-efficacy, and related metacognitive skills [24]. The scales used to assess A. show notable changes

In fact, from the results presented from T0 to T2, A. improved on almost all the administered scale scores.

Improvements in alexithymia scores also indicate a better ability to recognize one's emotions and those of others. Participants would also seem to perceive this factor as an

indicator of the improvement in self-efficacy in managing and expressing one's positive emotions and the ability to feel empathy.

Improvements in metacognitive scores indicate a greater awareness of control and recognition of negative emotions and dangerous thoughts and situations, which is crucial in cases of social isolation.

One of the key elements to pay attention to in the case of NEET is self-efficacy, defined as the belief that you can succeed by generating the desired results for a given task. According to Bandura [39], self-efficacy can be general (linked to one's ability to succeed in different areas/activities) and specific, i.e., a perceived competence related to the task. In this case, the improvement in perceived self-efficacy scores linked to emotions (the Perceived Self-Efficacy Scale in the Expression of Positive Emotions [36]) indicates a slight improvement in managing and effectively expressing positive emotions such as joy, a sense of satisfaction, serenity, trust, and enthusiasm, which help the subject in activities related to the affective sphere and in relationships with themselves and with others.

Although the results were obtained on a single subject, so statistical significance cannot be defined, they appear to be promising. This indicates that Video Game Therapy® can be a valuable support in the therapy of NEET youth, particularly in enhancing aspects of emotional self-efficacy and metacognition, especially in the cognitive components of confidence, cognitive self-awareness, and negative beliefs related to the inability to control thoughts and danger.

In Video Game Therapy®, it is essential to have a clear understanding of the objectives on which you intend to work with the subject and, therefore, the characteristics of the proposed game. In this case, as explained previously, there are no therapeutic objectives, but rather the strengthening of soft skills and transversal abilities (such as self-efficacy) that can counteract social isolation.

While the two chosen video games aligned well with the study's objectives and successfully stimulated the desired skills, they predominantly favored the dimension of agency in their gameplay. This is particularly relevant for NEETs, who often grapple with anxious tendencies. By focusing on problem-solving, decision-making, and metacognitive training, the agency dimension effectively alleviates anxiety and empowers individuals to take charge of their daily lives. As a result, the gains observed were primarily in metacognition, rather than in emotional self-efficacy or emotional intelligence, highlighting the importance of fostering agency in these individuals.

It is up to the therapist to choose the right games according to the situation; in this respect, formation in VGT provides therapists with tables describing the characteristics of the games and the related ways to apply them in the therapeutic process.

5. Conclusions

The study presented is one of the first case studies, at least in Italy, regarding using Video Game Therapy® in the NEET population. It focuses on metacognition, emotional regulation, and emotional self-efficacy. It showed that Video Game Therapy® can be a promising intervention in cases of social isolation. However, an increase in the sample is necessary to generalize the results.

While there are notable advantages to analyzing individual case studies, this approach was also met with valid criticisms and limitations. Key concerns revolve around methodological rigor, researcher bias, external validity, and issues related to generalization [40–42]. Thus, it is important to regard these findings as preliminary results from a study that is still ongoing. Additionally, the flow scale score was not incorporated in this initial analysis; integrating this measure in future evaluations will be essential to determine its potential role as a moderating factor influencing the results we have obtained.

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