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Attachment styles epistemic trust and mentalized affectivity in love addiction among emerging adult women

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Abstract

Background Love addiction (LA) is a maladaptive pattern of romantic involvement, marked by excessive partner preoccupation, loss of control, and relationship persistence despite negative consequences. While insecure attachment styles, epistemic stances (trust, mistrust, and credulity), and mentalized affectivity (identifying, processing, and expressing emotions) have been independently linked to maladaptive relational patterns, their interplay in LA remains underexplored.

Methods This study examined the relationships between LA, attachment styles, epistemic stances, and mentalized affectivity among 590 Italian emerging adult women. Network analysis was used to assess the structure and interconnections among these variables.

Results Attachment anxiety emerged as the most central node, reinforcing its primary role in LA. Epistemic credulity was strongly associated with LA, bridging attachment anxiety and compulsive relational behaviors. Epistemic mistrust showed a moderate association with LA, indicating a conflicting dynamic of dependency and skepticism. Difficulties in emotional processing and identifying emotions were negatively linked to LA, emphasizing the role of mentalized affectivity. Expressing emotions emerged as a key bridging factor integrating attachment, epistemic stances, and mentalized affectivity.

Conclusions Findings highlight the complex interplay among insecure attachment styles, epistemic stances, and mentalized affectivity in shaping LA risk. Addressing maladaptive epistemic stances and enhancing emotional expression could reduce relational dependency and instability, providing valuable directions for clinical interventions targeting young women.

Keywords Attachment styles, Love addiction, Emerging adult women, Epistemic trust, Mentalized affectivity



1 Introduction

Love Addiction (LA) can be defined as a maladaptive pattern of romantic involvement characterized by a pervasive and excessive interest in the partner, a loss of self-control, and the persistence of the relationship despite an awareness of its negative consequences [1, 2]. This condition often involves distorted self-representation, where individuals perceive themselves as unworthy of love and care, overly dependent, and in constant need of guidance and protection [3]. Simultaneously, they excessively idealize their partner, attributing exaggerated qualities to them and relying intensely on their support and validation [4].

The transition from healthy to pathological love occurs when romantic desire transforms into a compulsive need, and pleasure is replaced by suffering. In this affective state, the absence of the partner triggers significant psychological distress, perpetuating a cycle of dependency and maladaptive behaviors [1, 3]. In recent years, scientific literature has increasingly recognized the importance of studying LA, acknowledging its profound impact on mental health and interpersonal functioning [5]. Individuals struggling with LA often lack adaptive self-regulation strategies and exhibit a pervasive belief that love necessitates self-sacrifice, suffering, and the relinquishment of personal needs to secure affection [1, 2].

In this vein, it has been proposed that LA can be classified among the “New Addictions,” a heterogeneous group of conditions that, while not involving substance use, share key psychopathological features with substance dependence, including salience, tolerance, mood modification, relapse, withdrawal, and conflict [6, 7]. Salience is evident in the persistent preoccupation with the love object, which dominates thoughts, feelings, and behaviors. Tolerance manifests as an increasing need for time spent with the loved one or excessive rumination to maintain emotional equilibrium. Mood modification occurs when individuals attempt to cope with distress by focusing on or being in the presence of the loved one. Relapse reflects the difficulty in reducing or ceasing engagement with the partner, even after conscious attempts to do so. Withdrawal symptoms, both psychological and physical, often arise during periods of separation. Finally, conflict emerges when these dynamics interfere with daily functioning, disrupting work, education, relationships, and personal interests.

The feasibility of identifying and diagnosing LA remains debated. For instance, Billieux et al. [8] highlighted the risk of over-pathologizing everyday life by labeling excessive passions as addictions, while others, such as Redcay and McMahon [9], emphasized the relational nature of LA, distinguishing it from other behavioral addictions. Although LA is not officially recognized in diagnostic manuals like the DSM-5 [10], its clinical and research relevance is increasingly acknowledged.

The prevalence of LA in the general adult population is estimated to range between 3% and 6%, with significantly higher rates—up to 25%—among college students, particularly emerging adult women [5, 11]. This heightened vulnerability is associated with the challenges of emerging adulthood, a critical period for exploring identity, intimacy, and autonomy [12]. During this stage, romantic relationships are central to the lives of emerging adults, with over 80% engaging in such relationships [12]. For emerging adult women, societal pressures to prioritize relational success, caregiving roles, and emotional closeness further amplify their susceptibility to LA [1, 4, 11]. These pressures, combined with heightened emotional sensitivity, often foster maladaptive relational

dynamics characterized by excessive dependency, hyper-availability, and self-sacrificial behaviors aimed at maintaining relational stability [13, 14]. Given the significant negative consequences of LA on individuals' lives, examining the interplay of factors that sustain vulnerability to love addiction is crucial.

1.1 Love addiction and attachment styles

Several studies have highlighted the crucial role of attachment styles in shaping adult romantic relationships and their potential contribution to the development of LA [5, 15, 16]. Among these, an anxious-ambivalent attachment style has been identified as a significant risk factor [11, 15, 16]. Individuals with this attachment style, often shaped by inconsistent or emotionally unavailable caregiving experiences in childhood, display a heightened fear of abandonment, excessive dependence on their partners, and a tendency to idealize their relationships [5, 15].

Hazan and Shaver [17] were pioneers in extending attachment theory to adult romantic relationships. Their work demonstrated that anxious-ambivalent attachment style underlies many features of LA, with individuals exhibiting heightened emotional intensity in their relationships, characterized by preoccupation, jealousy, and a profound fear of separation. Subsequent research [e.g., 19] further reinforced the association between anxious-ambivalent attachment style and LA. Individuals with this attachment style tend to idealize their partners, constantly seek attention, and emotionally depend on the relationship while struggling with relational stability. Ahmadi et al. [15] also corroborated these findings, identifying a significant correlation between anxious-ambivalent attachment style and LA in a sample of university students.

Beyond the anxious-ambivalent attachment style, research has highlighted the role of other attachment styles in LA. Gori et al. [4] reported a significant association between LA and fearful/avoidant attachment style, characterized by deep mistrust of others and a tendency to avoid intimacy. Similarly, Salani et al. [11] found that, while the anxious-ambivalent attachment style remains the strongest predictor of LA, both "avoidant- fearful" and "avoidant-devaluing" attachment styles are more prevalent among individuals with LA compared to control groups.

1.2 Love addiction, epistemic trust and mentalized affectivity

LA can be understood through the lens of epistemic trust (ET) and mentalized affectivity. Indeed, according to Fonagy et al. [18], psychopathology, insecure attachment, and impaired mentalizing are interconnected through difficulties in establishing ET. This concept refers to the capacity to assess the relevance and reliability of information shared by others [19]. A well-functioning ET enables individuals to engage in interpersonal communication while maintaining a healthy balance between openness and skepticism.

However, disruptions in ET, often rooted in insecure attachment (e.g., avoidance or ambivalence), can manifest as either hypervigilance—marked by pervasive distrust—or credulity, an excessive reliance on others driven by the need for connection [18, 20]. These disruptions in ET can be traced back to early relational experiences. Indeed, according to Luyten et al. [21], experiences of physical or emotional abuse and neglect within attachment relationships can undermine epistemic trust, leading to epistemic petrification or imbalances in vigilance [22]. As a result, individuals may adopt either

epistemic mistrust or epistemic credulity. Mistrust is marked by rigidity and a tendency to view information sources as unreliable or harmful, whereas credulity impairs the ability to critically evaluate information, fostering excessive dependence on others and increasing vulnerability to manipulation. These maladaptive epistemic stances may leave individuals vulnerable to manipulation or lead to the rejection of valuable social input, both of which are often observed in relational patterns associated with LA [5]. Notably, research suggests that ET mediates the relationship between childhood traumatic experiences and the development of psychopathology in adolescence, with epistemic mistrust and credulity acting as risk factors, and mentalizing processes offering a protective buffer against such vulnerabilities [23].

ET is theoretically connected to mentalized affectivity, namely the ability to process, reflect upon, and express emotions in a way that integrates past experiences and relational contexts [24]. Specifically, mentalized affectivity refers to the processes of identifying, processing, and expressing emotions [25] and represents a more advanced form of emotion regulation. This capacity requires individuals to reflect on their own thoughts and feelings while also considering the factors that shape emotional experiences [24]. Among its key components, both processing and expressing emotions play a crucial role, as they allow individuals to integrate cognitive and affective elements into meaningful interpretations [25]. When these abilities are compromised—such as in individuals with insecure attachment or unresolved trauma—difficulties in understanding and regulating emotions can arise, increasing emotional vulnerability in interpersonal relationships [21]. Research suggests that women tend to score lower than men in emotional processing, indicating potential gender differences in how emotions are managed and integrated [25, 26]. Thus, mentalized affectivity plays a key role in emotion regulation, allowing individuals to adaptively navigate challenges and maintain healthy interpersonal bonds [27, 28]. When disrupted, often due to insecure attachment styles, mentalized affectivity impairs the capacity to recognize meaningful experiences, manage distress, and build psychological resilience [23, 29, 30]. Conversely, higher levels of mentalized affectivity are linked to lower neuroticism, greater emotional well-being, and improved life satisfaction [25, 31].

The interplay between epistemic stances (trust, mistrust and credulity) and mentalized affectivity provides valuable insights into the emotional and relational vulnerabilities of individuals with LA. However, research on gender differences in epistemic trust is still limited. To date, only one study [32] has specifically examined gender differences, highlighting distinct developmental trajectories that link reflective capacities, epistemic trust, and externalizing or internalizing problems. These findings suggest the importance of further investigating gender-related differences in epistemic trust to deepen our understanding of its role in LA. Furthermore, insecure attachment not only compromises the ability to evaluate the trustworthiness of others but also hinders the emotional flexibility required for healthy relationships. Understanding these interconnected processes offers a framework for addressing the dependency, instability, and relational distress that define LA.

1.3 The present study

The present study represents the first attempt to integrate insecure attachment styles, maladaptive epistemic stances (mistrust and credulity), and mentalized affectivity into

a unified framework for understanding LA. Although previous research has highlighted the individual roles of the above-mentioned dimensions in various psychopathological outcomes [18, 23, 24], no studies to date have jointly examined these variables in the context of LA among emerging adult women.

While prior studies have demonstrated the link between insecure attachment styles and maladaptive relational patterns [4, 11], such as LA, the dynamics underlying this association remain underexplored. Notably, the role of epistemic stances (trust, mistrust, and credulity) has been largely overlooked. Additionally, although mentalized affectivity is recognized as a key factor in emotional regulation and interpersonal functioning [23, 28], its relationship with LA and epistemic stances remains unexplored. Addressing these gaps, the present study aims to offer a more comprehensive understanding of the cognitive and affective processes contributing to LA.

Building on existing literature, we explored the relationships between maladaptive epistemic stances, mentalized affectivity, attachment styles, and LA. Given the link between epistemic trust disruptions and relational difficulties [18], we expected both epistemic mistrust and epistemic credulity to be associated with LA. Additionally, since mentalized affectivity plays a key role in emotional regulation [24], we anticipated its association with both LA and epistemic stances.

Finally, as insecure attachment is associated with relational patterns and epistemic trust (19–20), we expected attachment insecurity to be linked to both LA and disruptions in epistemic trust.

2 Methods

2.1 Design and procedure

In the present cross-sectional study, participants were recruited through a snowball sampling method, with the survey link disseminated via social media platforms such as Facebook and Instagram, as well as through word-of-mouth among emerging adult women. Inclusion criteria for the study were: (a) being assigned female at birth, (b) aged 18 to 30 years, (c) living in Italy, (d) currently or previously in a romantic relationship for at least 6 months, and (e) fluent in Italian. Individuals older than 30 years were excluded from the study. Prior to starting the questionnaire, participants provided informed consent and were assigned a unique identifier to ensure confidentiality and anonymity.

The survey was conducted on the online Qualtrics platform, and participants were informed about the estimated time required to complete the questionnaire. The survey took approximately 15 min to complete. No monetary or material incentives were offered for participation. The study adhered to the ethical guidelines of the American Psychological Association (APA) and the principles outlined in the Declaration of Helsinki (2013). All materials and procedures received approval from the Ethics Committee of the University of Milan – Bicocca (protocol code n. 775, date of approval 14 June 2023) and the Territorial Ethics Committee of Lazio Area 2 (protocol code n. 78.24, date of approval 21 March 2024).

2.2 Participants

The sample comprised 590 cisgender emerging adult women residing in Italy. All participants were assigned female at birth (AFAB; 100%). Participants were between 18 and 30 years old ($M = 24.40$, $SD = 2.68$), with 97.6% reporting being born in Italy. Regarding

educational attainment, 172 participants (29.2%) held a high school diploma or equivalent, 277 (46.9%) had completed a bachelor's degree, 120 (20.3%) had earned a master's degree, and 15 (2.5%) reported completing a PhD or specialized training. Only 4.6% of participants were married. Regarding living arrangements, 503 participants (85.3%) reported they were not living alone, while 87 (14.7%) were living alone. Of those cohabiting, 76 (15.1%) were living with a partner, and 6 (1.2%) reported living with a partner and children, while the other participants lived with their parents, relatives, or cohabitants with other emerging adults. Employment and academic status varied: 350 participants (59.3%) identified as students, 175 (29.7%) reported being employed, 26 (4.4%) were unemployed (including those receiving subsidies), and 39 (6.6%) selected other employment categories. A preliminary power analysis was conducted using the *Powerly* an R package to estimate the minimum required sample size for network analysis [33]. The analysis indicated that a sample size of $N = 400$ was necessary to achieve 80% power with a network model of 9 nodes. Therefore, our study was adequately powered.

2.3 Materials

Participants were asked to complete self-report instruments on LA, adult attachment styles, epistemic stances, and mentalized affectivity.

2.3.1 Love addiction

The *Love Addiction Inventory–Short Form* (LAI-SF) consists of six items (e.g., “Feel the urgent need to be with your partner”) that measure symptoms of LA [7]. Each item is scored on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*), with higher total scores indicating greater levels of LA. In this study, the total score was used in statistical models. McDonald's omega was 0.83, indicating good reliability.

2.3.2 Attachment style

The *Experiences in Close Relationships-Revised* (ECR-R) scale was used to assess attachment-related anxiety and avoidance [34]. This 36-item self-report measure evaluates two dimensions of attachment: *Anxiety* (e.g., “I worry a lot about my relationships”) and *Avoidance* (e.g., “I don't feel comfortable opening up to romantic partners”). Responses are rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate higher levels of attachment-related anxiety or avoidance, respectively. The ECR scale has demonstrated strong psychometric properties, including high internal consistency and validity in previous studies [35]. The internal consistency of the ECR-R, as reflected by McDonald's omega, ranges from 0.79 to 0.80, indicating good reliability.

2.3.3 Epistemic trust, mistrust, and credulity

The Epistemic Trust, Mistrust, and Credulity Questionnaire (ETMCQ) is a 15-item self-report measure [22] that assesses *epistemic trust* (e.g., “I trust the knowledge shared by others”), *mistrust* (e.g., “I suspect others may mislead me”), and *credulity* (e.g., “I accept others' views without much questioning”). Responses are rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores in each subscale reflect greater levels of epistemic trust, mistrust, or credulity, respectively. The ETMCQ has demonstrated excellent psychometric properties, including reliability and validity in

both clinical and non-clinical populations [36]. The internal consistency of the ETMCQ, as reflected by McDonald's omega, ranges from 0.69 to 0.75, indicating adequate reliability.

2.3.4 Mentalized affectivity

The *Brief-Mentalized Affectivity Scale* (B-MAS) is a succinct self-report instrument developed to assess an individual's ability to reflect upon and regulate emotions [37], a key component of mentalization. Designed as a more concise version of the *Mentalized Affectivity Scale* (MAS) [26], the B-MAS consists of 12 items that evaluate three fundamental dimensions of mentalized affectivity: Identifying, Processing, and Expressing emotions. *Identifying* emotions refers to the recognition and labeling of one's feelings, as well as understanding their sources (e.g., "I try to put effort into identifying my emotions"). *Processing* emotions involves managing the intensity and duration of emotions through implicit regulation strategies (e.g., "It is hard for me to manage my emotions"). *Expressing* emotions pertains to effectively communicating emotions to others (e.g., "I often keep my emotions inside"). The B-MAS maintains the psychometric strengths of the original MAS while reducing the time required for administration, showing significant correlations with well-established measures of emotion regulation and mentalization. Moreover, the B-MAS has demonstrated predictive validity concerning various mental health outcomes. Thus, the B-MAS remains an effective tool for evaluating mentalized affectivity across diverse populations [25]. The internal consistency of the B-MAS, as reflected by McDonald's omega, ranges from 0.79 to 0.84, indicating good reliability.

2.4 Statistical analyses

Data analyses were conducted using Mplus v.8.3 [38] and R statistical software version 4.3.3 (R Core Team, 2024) with relevant packages recommended for network analysis estimation and visualization (see Supplementary Materials for a complete description). Initially, the dataset was examined for data entry accuracy and missing values. Multivariate outliers were detected using Mahalanobis distance and subsequently excluded from the sample [39]. Descriptive statistics, including means, standard deviations, skewness, and kurtosis, were calculated for all items and variables, such as love addiction, attachment-related anxiety and avoidance, epistemic trust, mistrust, credulity, and the dimensions of mentalized affectivity (processing, expressing, and identifying emotions). Then, bivariate correlations among the study variables were computed. To examine the latent structure of the variables in our study, we employed an Exploratory Structural Equation Modeling (ESEM). ESEM integrates the advantages of Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA) within a single framework [40, 41]. Unlike CFA, which restricts item loadings to predefined factors, ESEM permits cross-loadings, mitigating bias associated with rigid factor structures and ensures a more flexible representation of psychological constructs [40, 42]. To optimize the factor structure, we applied the targeted rotation method using the ESEM Code Generator for Mplus [43, 44]. This technique minimizes cross-loadings, ensuring that secondary loadings remain as close to zero as possible while being freely estimated. The latent variables were allowed to correlate at a latent level. Thus, nine latent variables—love addiction, attachment-related anxiety and avoidance, epistemic trust, mistrust, credulity, and

the three dimensions of mentalized affectivity (processing, expressing, and identifying emotions)—were modeled using their corresponding self-report items as manifest indicators. The resulting factor scores were then extracted and used as input for subsequent network modeling. Unlike traditional multiple regression, mediation, and moderation analyses—which impose directional assumptions—network modeling offers an exploratory, data-driven approach to uncovering interconnections between latent constructs [45, 46]. To evaluate the stability and consistency of the network, we applied bootstrap procedures ($N = 1000$ resamples) to estimate both centrality and bridge indices. Stability coefficients were computed for strength, expected influence, and bridge strength centrality indices [47]. Next, we constructed correlation networks using the Graphical Least Absolute Shrinkage and Selection Operator (GLASSO) algorithm [48, 49]. Following this, we calculated centrality indices to determine key nodes in the network, including expected influence, strength, closeness, and betweenness. Strength and expected influence both reflect the sum of edge weights associated with a node, with strength relying on absolute values [50]. Closeness centrality represents a node's proximity to others, computed as the inverse of the sum of shortest path distances, highlighting nodes that efficiently transmit information [47]. Betweenness centrality captures how frequently a node functions as a bridge in the shortest paths between other nodes, emphasizing its role in network connectivity and information flow [47]. Additionally, we conducted bridge centrality analysis to pinpoint nodes that serve as connectors between distinct psychological constructs within the network [51].

3 Results

3.1 Descriptive and preliminary analyses

In all scales, no missing values were present. 49 participants (8.3% of the sample) were identified as multivariate outliers using Mahalanobis distance with $p < .001$. After removing these outliers, the final sample consisted of 541 emerging adult women with ages ranging from 18 to 30 years ($M = 24.42$, $SD = 2.65$). Descriptive statistics indicated that the items were normally distributed with respect to skewness and kurtosis (see Table S1). Considering the variables, descriptive statistics are presented in Table 1, while the linear associations between study variables are presented in Table 2. Higher attachment-related anxiety levels ($r = .181$, $p < .001$) and lower attachment-related avoidance levels ($r = -.322$, $p < .001$) were associated with greater LA. Relatedly, higher epistemic mistrust ($r = .323$, $p < .001$) and credulity ($r = .272$, $p < .001$) were associated with greater LA. No

Table 1 Descriptive statistics of the study variables ($N = 541$).

	<i>N</i>	Mean	Std.Dev	Median	Skewness	SE.Skewness	Kurtosis
LA	541	2.92	0.73	2.83	0.38	0.11	0.01
ECR_Anxiety	541	3.11	0.61	2.94	0.67	0.11	-0.45
ECR_Avoidance	541	4.44	0.52	4.50	-0.73	0.11	0.84
PROC	541	4.00	1.20	4.00	-0.04	0.11	-0.10
EXP	541	3.89	1.33	4.00	0.04	0.11	-0.51
IDE	541	5.25	1.18	5.25	-0.50	0.11	-0.23
CRED	541	2.94	1.16	2.80	0.37	0.11	-0.21
MISTRUST	541	3.69	1.08	3.80	-0.04	0.11	-0.01
TRUST	541	4.98	1.01	5.00	-0.33	0.11	0.02

LA=Love Addiction; ECR_Anxiety=Attachment Anxiety; ECR_Avoidance=Attachment Avoidance; PROC=Emotional Processing
 IDE=Identifying Emotions; EXP=Expressing Emotions; TRUST=Epistemic Trust; MISTRUST=Epistemic Mistrust
 CRED=Epistemic Credulity

Table 2 Zero-Order correlations among manifest variables love Addiction, attachment Styles, epistemic Stances, and mentalized affectivity (N= 541)

	LA	ECR_Anx	ECR_Avo	TRUST	MISTRUST	CRED	IDE	PROC	EXP
LA		0.18***	-0.32***	0.06	0.32***	0.27***	-0.01	-0.31***	-0.05
ANXATT	0.18***		-0.62***	0.03	0.09*	0.14**	-0.05	-0.11*	-0.03
ATTAVO	-0.32***	-0.62***		-0.02	-0.27***	-0.26***	-0.01	0.24***	0.05
TRUST	0,06	0,03	-0,02		-0.10*	0,08	0.30***	0.11*	0.42***
MISTRUST	0.32***	0.09*	-0.27***	-0.10*		0.40***	-0.04	-0.34***	-0.39***
CRED	0.27***	0.14**	-0.26***	0,08	0.40***		-0.11**	-0.30***	-0.13**
IDE	-0.01	-0.05	-0.01	0.30***	-0,04	-0.11**		0.24***	0.39***
PROC	-0.31***	-0.11*	0.24***	0.11*	-0.34***	-0.30***	0.24***		0.38***
EXP	-0.05	-0.03	0,05	0.42***	-0.39***	-0.13**	0.39***	0.38***	

LA=Love Addiction; ECR_Anx=Attachment Anxiety; ECR_Avo=Attachment Avoidance; PROC=Emotional Processing; IDE=Identifying Emotions; EXP=Expressing Emotions; TRUST=Epistemic Trust; MISTRUST=Epistemic Mistrust; CRED=Epistemic Credulity. * $p < .05$, ** $p < .01$, *** $p < .001$

significant associations were found between LA and epistemic trust. Finally, higher levels of difficulties in emotional processing were associated with greater LA ($r = -.310$, $p < .001$), while expressing and identifying emotions showed no significant associations with LA.

3.2 Exploratory structural equation model estimation

3.3 Exploratory structural equation model estimation

The ESEM model was estimated using the weighted least squares mean and variance adjusted (WLSMV) estimator to account for the ordinal nature of item-level variables. The results indicate that the model provides a good fit to the data. The chi-square test of model fit was significant, $\chi^2(487) = 972.23$, $p < .001$, which is expected given the large sample size. However, alternative fit indices suggest an adequate-fitting model. The Root Mean Square Error of Approximation (RMSEA) was 0.043 (90% CI [0.039, 0.047]), with a probability of RMSEA $\leq 0.05 = 0.999$, indicating a close fit. The Comparative Fit Index (CFI) = 0.959 and Tucker-Lewis Index (TLI) = 0.931, both exceeding conventional cut-offs for good model fit (CFI > 0.95 ; TLI > 0.90 [52, 53]), further support the adequacy of the model. Additionally, the Standardized Root Mean Square Residual (SRMR) = 0.021, well below the 0.08 threshold, confirms the adequate fit [52, 53].

3.4 Associations between factor scores

As shown in Fig. 1, exhibited small to moderate associations with emotional processing difficulties and difficulties in identifying emotions. This highlights the importance of emotional regulation in managing these symptoms in emerging adult women. Moreover, higher credulity correlated with higher LA, while a small positive correlation between mistrust and LA suggests that higher skepticism toward others' reliability is linked to higher LA. As expected, attachment anxiety and LA were positively associated.

3.5 Network stability

Bootstrap analyses confirmed the network's accuracy (see Supplementary Figs. 1S and 2S) and demonstrated comparable stability for both strength and expected influence indices. These results validate the significant role of LA, attachment, epistemic dimensions, and mentalized affectivity in network activation. The correlation stability

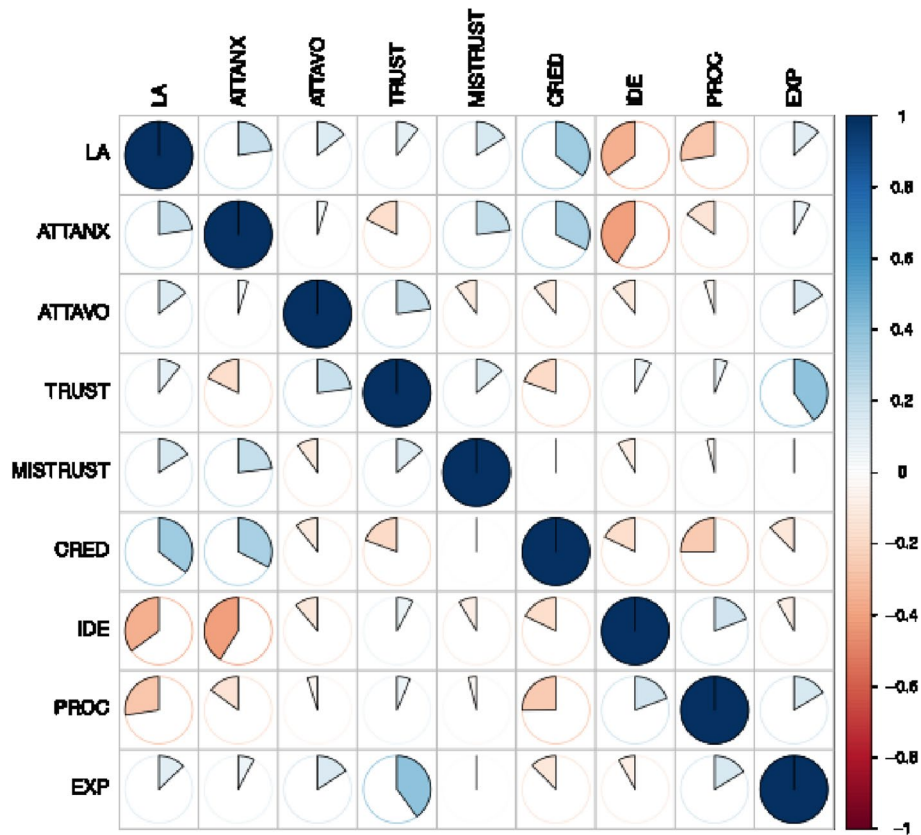


Fig. 1 Zero-order correlations among love addiction, attachment, epistemic trust, and mentalized affectivity (N=541). LA=Love Addiction; ATTANX=Attachment Anxiety; ATTAVO=Attachment Avoidance; PROC=Emotional Processing; IDE=Identifying Emotions; EXP=Expressing Emotions; TRUST=Epistemic Trust; MISTRUST=Epistemic Mistrust; CRED=Epistemic Credulity

coefficients were 0.66 for edge weights and strength and 0.73 for expected influence indices, indicating that up to 66% of cases could be removed while maintaining a 95% probability of preserving a 0.7 correlation for edge weights and strength. Similarly, up to 73% of cases could be removed while maintaining the same probability threshold for expected influence [47]. Thus, centrality and bridge indices are stable and interpretable, providing meaningful insights into the roles and influence of different nodes and edges within the network.

3.6 Network estimation

The network was constituted by 9 nodes and 17 edges out of 36 possible connections, with a sparsity of 0.528 and a mean weight of 0.046 (Fig. 2). The sparsity suggested that 47.2% of the possible edges were present in the network, indicating a moderate level of connectivity among the nodes.

3.7 Network inference

Network analysis was conducted to examine the relationships between LA and key psychological constructs, including attachment styles, attachment avoidance, epistemic stances and mentalized affectivity. This approach allows for a data-driven exploration of how these constructs interact without imposing strict causal assumptions. As shown in Fig. 2, LA is strongly connected to epistemic credulity that, in turn, is linked to

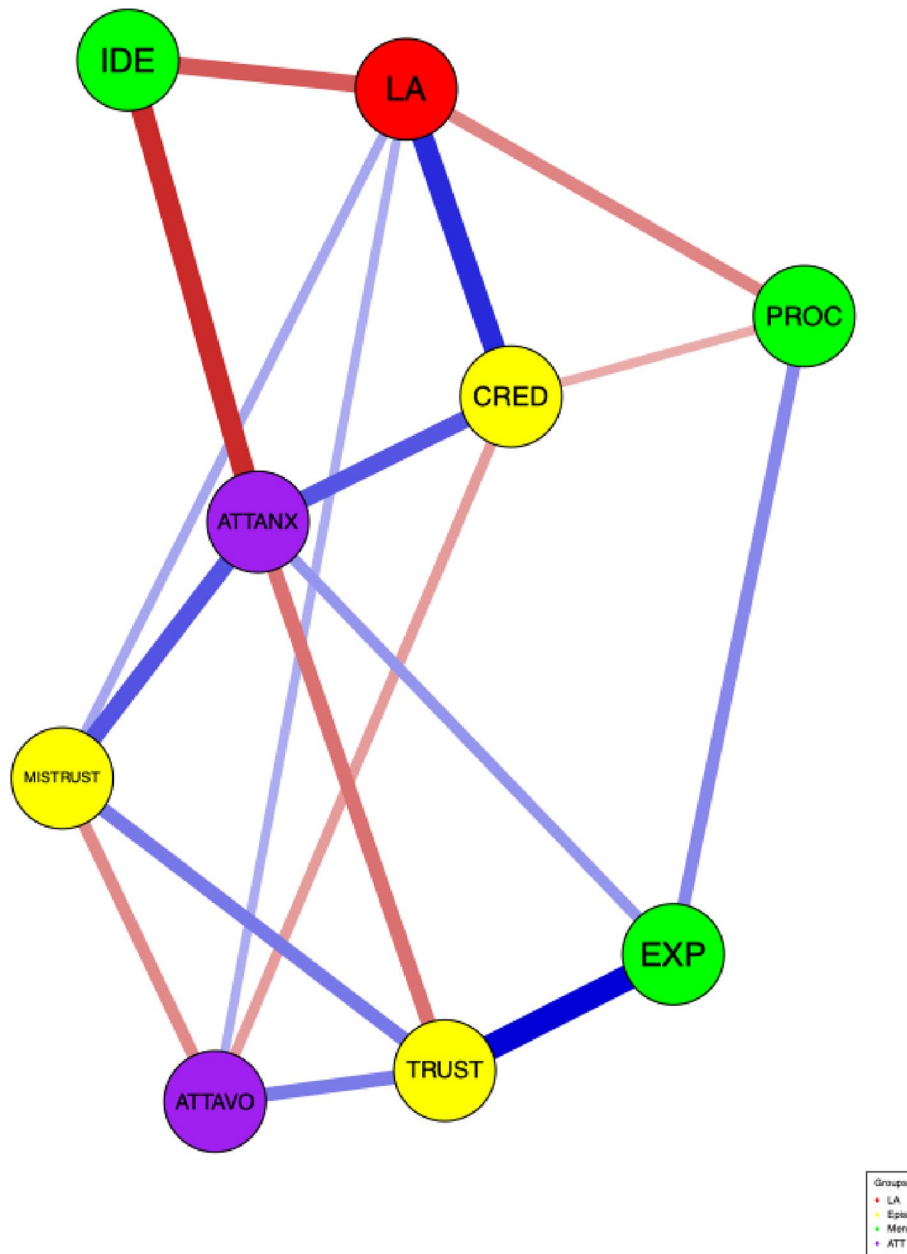


Fig. 2 EBICglasso network depicting Love Addiction, Mentalized Affectivity, Epistemic Trust, Mistrust, Credulity and Attachment in emerging adults women (N = 541). Nodes represent variables and edges depict the relation between two variables controlling for all other variables. Thicker edges indicate stronger positive (blue) or negative (red) partial correlations. LA=Love Addiction; ATTANX= Attachment Anxiety; ATTAVO= Attachment Avoidance; PROC= Emotional Processing; IDE= Identifying Emotions; EXP= Expressing Emotions; TRUST= Epistemic Trust; MISTRUST= Epistemic Mistrust; CRED= Epistemic Credulity

attachment anxiety. These associations suggest that individuals with higher attachment anxiety and a tendency to uncritically accept information from others may be more vulnerable to LA. LA also shows a connection to epistemic mistrust suggesting that women with higher LA may simultaneously experience higher skepticism or difficulty in trusting others, which could create an unstable push-pull dynamic in relationships, such as seeking reassurance while simultaneously doubting the reliability of the partner. Moreover, LA is strongly associated with difficulties in identifying emotions with a clear link

with attachment anxiety. This pattern suggests that greater attachment anxiety is linked to poorer emotional awareness, and that greater difficulties in emotional awareness are associated with stronger compulsive relational behaviors. The edge weight difference test in Fig. 3 confirms that the LA and credulity link is among the most stable associations in the network, reinforcing their central role in the interplay between epistemic vulnerabilities and LA. Figure 4 presents the centrality indices, which indicate the relative influence of each variable within the network. LA demonstrates high expected influence, meaning that it plays a key role in the overall network and is strongly interconnected with the other dimensions. Attachment anxiety emerges as the most central node, suggesting that attachment insecurity serves as a primary driver of LA, influencing both epistemic stances and emotional processing. Epistemic mistrust and epistemic trust also exhibit high strength centrality, highlighting their role in shaping how individuals with LA navigate relationships and interpersonal information. Processing and identifying emotions show lower centrality indices, but at the same time, they evidenced a strong stability and a great magnitude of negative association with LA evidencing difficulties in processing and identifying emotions as key factors that influence LA. Node predictability ranged

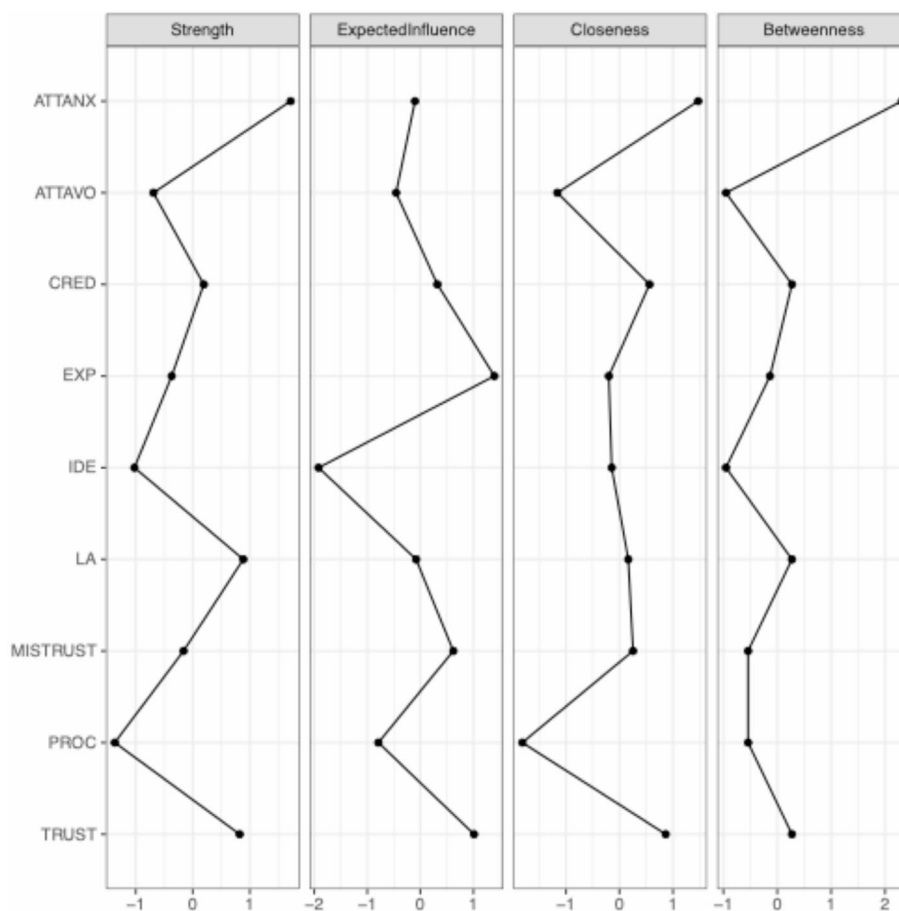


Fig. 3 Bootstrapped Edge-Weights Difference Test of the network variables. *Note.* Diagonal indicates the edge colors with the corresponding direction (red = negative, blue = positive) and magnitude of the associations. Gray colored boxes represent non-significant differences between two nodes, Black boxes represent significant differences between two nodes ($p < .05$). LA = Love Addiction; ATTANX = Attachment Anxiety; ATTAVO = Attachment Avoidance; PROC = Emotional Processing; IDE = Identifying Emotions; EXP = Expressing Emotions; TRUST = Epistemic Trust; MISTRUST = Epistemic Mistrust; CRED = Epistemic Credulity

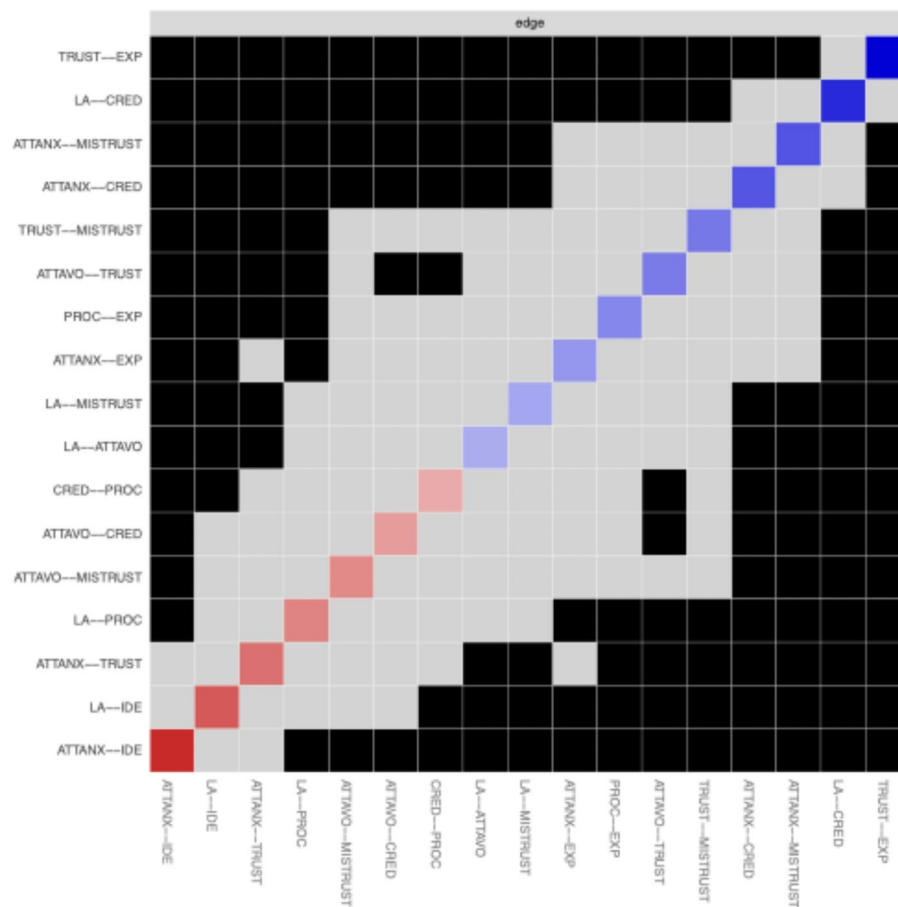


Fig. 4 Centrality indices of the network variables. Centrality indices (i.e., node strength, expected influence, closeness, betweenness) are shown as standardized z-scores. LA=Love Addiction; ATTANX=Attachment Anxiety; ATTAVO=Attachment Avoidance; PROC=Emotional Processing; IDE=Identifying Emotions; EXP=Expressing Emotions; TRUST=Epistemic Trust; MISTRUST=Epistemic Mistrust; CRED=Epistemic Credulity

from 0.129 for Attachment Avoidance to 0.317 for Attachment Anxiety, with an average of 0.232 (SD = 0.071), indicating that, on average, 23.2% of the variance in each node could be explained by connected nodes (see Supplementary Materials).

To examine the interconnectivity of psychological constructs within the network, bridge centrality indices were computed, including bridge strength and bridge expected influence (see Supplementary Figures). Bridge strength quantifies the extent to which a node connects different clusters in the network, while bridge expected influence considers both direct and indirect connections, reflecting the overall impact of a node in bridging different psychological domains. Results indicate that attachment anxiety and LA exhibit the highest bridge strength, suggesting that these constructs serve as key links between epistemic stances and mentalized affectivity. Examining Bridge Expected Influence, expressing emotions (EXP) demonstrated the highest bridge expected influence, suggesting that it plays a crucial role in integrating different constructs like epistemic stances, attachment and mentalized affectivity. The strong influence of EXP implies that the ability to express emotions may shape the way attachment insecurity and difficulty in mentalization interact with LA, making it a key mechanism in how these psychological systems influence one another.

4 Discussion

The main aim of the study was to integrate insecure attachment styles, maladaptive epistemic stances (mistrust and credulity), and mentalized affectivity into a unified framework for understanding LA among emerging adult women. To address this aim, we implemented a network analysis approach. Specifically, as we expected, findings highlighted the strong connection between LA and attachment anxiety, underscoring the role of attachment insecurity in shaping compulsive relational behaviors [11]. Indeed, individuals with heightened attachment anxiety often exhibit an increased need for reassurance and fear of abandonment, which may contribute to addictive relationship patterns [15, 54]. This result aligns with existing literature indicating that individuals with fear of abandonment and hyperactivation of attachment needs may engage in compulsive romantic behaviors as a means of seeking reassurance and emotional validation [15, 16, 54]. This highlights LA as an attachment-based phenomenon, where excessive relational dependence may serve as a maladaptive strategy to cope with perceived relationship insecurity [9, 17].

Furthermore, as expected, the study revealed that epistemic credulity plays a pivotal role in LA, reinforcing the idea that individuals who uncritically accept information from others may be more vulnerable to maladaptive relationship dynamics. The strong association between epistemic credulity and attachment anxiety suggests that attachment-related insecurities may heighten one's tendency to overly trust external sources, fostering dependency and reinforcing addictive behaviors in romantic contexts. This finding aligns with existing literature on epistemic trust and attachment, highlighting the broader impact of epistemic vulnerabilities on interpersonal functioning [18, 21]–[22]. Moreover, this finding underscores the potential role of epistemic biases in shaping addictive relationship patterns, where individuals may over-trust partners or idealize relationships, making them more prone to excessive emotional dependence. Indeed, as we hypothesized, the association with epistemic credulity indicates that over-trusting others may facilitate addictive relationship patterns, where individuals struggle to maintain healthy emotional boundaries. The moderate connection to epistemic mistrust highlights potential contradictory interpersonal dynamics, where LA may involve both excessive dependence and distrust, contributing to unstable and emotionally charged relationships. These findings are consistent with prior research suggesting that insecure attachment styles foster maladaptive cognitive and emotional patterns, such as excessive reliance on others or distrust of others, which may predispose individuals to dependency in romantic relationships [18, 27, 55]–[56]. Indeed, emerging adult women with attachment-related anxiety may experience a heightened fear of abandonment and an intense need for reassurance, resulting in a dual tendency: on the one hand, epistemic mistrust, wherein others are perceived as unreliable or threatening, coupled with a persistent need for relational validation. This often leads to efforts to control their partner's behavior as a means of mitigating relational anxiety [55]. On the other hand, epistemic credulity may heighten their susceptibility to manipulation, further perpetuating cycles of dependency and emotional instability characteristic of LA [5].

Additionally, as we expected difficulties in identifying and processing emotions emerged as key aspects of the network structure. These difficulties were strongly linked to LA, suggesting that individuals with greater emotional unawareness may be more prone to compulsive relational behaviors. Given the well-established link between

attachment anxiety and emotional dysregulation [26], our findings seem to suggest that difficulties in emotional awareness may act as a mediating mechanism linking attachment insecurity to LA. This reinforces the importance of mentalized affectivity in understanding maladaptive relationship patterns.

Network centrality indices further supported these findings, with attachment anxiety emerging as the most central node. As anticipated, this suggests that attachment anxiety plays a key role in LA and is closely connected to both epistemic stances and mentalized affectivity. Furthermore, epistemic mistrust and epistemic trust exhibited high centrality, emphasizing their role in shaping how individuals with LA engage with interpersonal information and relationships [18, 27, 55].

Bridge centrality analyses provided additional insights into how different psychological constructs interact within the network. Specifically, as expected, attachment anxiety and LA emerged as key bridges between maladaptive epistemic stances and mentalized affectivity, reinforcing the notion that attachment insecurity is a crucial link between cognitive vulnerabilities and compulsive relational behaviors [18–20, 23]– [24].

Notably, the ability to express emotions demonstrated the highest bridge expected influence, suggesting that emotional expression plays a critical role in integrating attachment insecurity, epistemic stances, and mentalized affectivity within the broader network. This aligns with previous research that has demonstrated how difficulties in mentalized affectivity, such as emotional expression, reflect a reduced capacity to critically evaluate relational dynamics and internal emotional states, thereby amplifying the role of credulity or mistrust [5]. In this context, as we hypothesized, individuals with attachment-related anxiety may become more susceptible to the maladaptive dependency patterns characteristic of LA, as they are more prone to uncritically accepting external cues and relying excessively on partners for validation, while at the same time experiencing heightened insecurity when others are perceived as unreliable or untrustworthy, reinforcing their persistent need for relational reassurance.

This study has several limitations that should be acknowledged. First, the cross-sectional design precludes any causal interpretations of the relationships between attachment styles, epistemic stances, mentalized affectivity, and LA. Future studies employing longitudinal or experimental designs are needed to establish causal pathways and explore how these relationships develop and are maintained over time. Second, the sample was recruited through a snowball sampling method and limited to emerging adult women residing in Italy, which may restrict the generalizability of the findings to other populations from different cultural contexts. Future research should include more diverse samples, including participants from different genders, sexual orientations, age groups, and cultural backgrounds, to examine the generalizability of these findings. Third, the reliance on self-report measures may introduce biases such as social desirability or inaccuracies in self-perception, or common method bias (CMB), which can inflate associations between variables due to shared measurement methods. Although some measures used have demonstrated strong psychometric properties, future studies could benefit from incorporating multi-method approaches, such as interviews or behavioral assessments, to validate the findings. Moreover, another limitation of this study concerns the psychometric properties of the Epistemic Trust, Mistrust, and Credulity Questionnaire (ETMCQ) and the Experiences in Close Relationships-Revised (ECR-R) scale. Previous research has raised concerns about the factorial structure of

the ETMCQ [36]. Similarly, the ECR-R has been questioned for its factor structure and potential redundancy between its two main dimensions, attachment anxiety and avoidance, which may not always align with the theoretical distinction between attachment styles [57]. Future studies should consider utilizing updated or alternative measures with validity to enhance the robustness of findings related to both epistemic stances and attachment processes. Additionally, while network analysis provides a valuable framework for examining the interplay between psychological constructs, it remains a relatively novel methodological approach, with ongoing debates regarding its interpretative validity and underlying assumptions [46]. Future research should aim to recruit larger and more heterogeneous samples to enhance the robustness and external validity of the findings. Furthermore, longitudinal studies are needed to test the stability and directionality of the associations identified in the present study and to assess whether similar patterns emerge across different populations, thereby strengthening the generalizability of the results.

Notwithstanding these limitations, the study findings provide valuable insights for clinical interventions targeting LA in emerging adult women. First, given the centrality of attachment anxiety in LA, interventions should focus on promoting secure attachment patterns by fostering emotional regulation strategies and strengthening self-efficacy in relational contexts. Enhancing individuals' capacity to tolerate uncertainty in interpersonal relationships may help mitigate the tendency to seek excessive reassurance or, conversely, to withdraw due to mistrust. Moreover, interventions should aim to enhance emerging adult women's ability to develop balanced trust in others, reducing excessive reliance on or skepticism of interpersonal relationships, which can fuel dependency behaviors. Second, the ability to express emotions plays a critical role in integrating attachment insecurity, epistemic stances, and mentalized affectivity for this reason clinicians can integrate therapeutic approaches, such as mentalization-based therapy (MBT), to help patients process, express and integrate their emotional experiences more effectively [24, 58].

Strengthening these skills may buffer the negative relational patterns associated with attachment-related anxiety reducing vulnerability to LA. Moreover, focusing on mentalization abilities and emotional regulation, particularly regarding both positive and negative emotions within romantic relationships, could help individuals adopt more adaptive strategies instead of relying predominantly on their partner as a source of emotional regulation [55, 59]. Additionally, therapeutic interventions should aim to strengthen the individual's sense of self, reinforce their identity, and challenge the perception of being undeserving of love or care—an outlook often rooted in deep-seated insecurities within their internal working models [59, 60].

Finally, the emphasis on emerging adult women in this study highlights the need for tailored interventions that address the developmental and relational challenges specific to this group [61]. Therapists should consider the unique social and emotional pressures faced by young women, such as navigating autonomy and intimacy [12], when designing interventions aimed at promoting healthier relational patterns and reducing the risk of LA.

5 Conclusion

In conclusion, this study is the first to integrate attachment styles, maladaptive epistemic stances, and mentalized affectivity into a unified framework for understanding LA among emerging adult women. The network analysis provides novel insights into their complex interplay, highlighting the central role of attachment anxiety in shaping compulsive relational behaviors. As a key driver of LA, attachment insecurity appears to heighten both emotional dysregulation and epistemic vulnerabilities, fostering a maladaptive dynamic in which individuals oscillate between excessive reliance on others and skepticism toward their reliability.

These findings emphasize the need to address both epistemic trust and mentalized affectivity in therapeutic interventions, particularly by enhancing emotional regulation strategies and promoting more adaptive relational patterns. Strengthening the ability to process and express emotions may be particularly beneficial in mitigating the reinforcing cycle of attachment anxiety and compulsive relational behaviors. Future research should further investigate these mechanisms in diverse populations and longitudinal contexts to refine our understanding of the developmental trajectories and clinical implications of LA.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1007/s44202-025-00470-0>.

Supplementary Material 1.

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Author contributions

A.F., S.M., I.M.A.B., J.T., N.C., M.C., and L.A.L.P. substantially contributed to the conception of the work. I.M.A.B., J.T., and N.C. contributed to acquisition and interpretation of data. A.F. analyzed the data. N.C. supervised the project. A.F., S.M., I.M.A.B., N.C. drafted the manuscript, which was then revised critically and approved for publication by all authors.

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Data availability

The datasets generated during and/or analyzed during the present study are not openly available due to reasons of sensitivity and privacy, but they are available from the corresponding author upon reasonable request.

Declarations

Ethics approval

All materials and procedures received approval from the Ethics Committee of the University of Milan – Bicocca (protocol code n. 775, date of approval 14 June 2023) and the Territorial Ethics Committee of Lazio Area 2 (protocol code n. 78.24, date of approval 21 March 2024).

Consent to participate

All participants provided informed consent prior to taking part in the study. Participation was voluntary, and anonymity and confidentiality were ensured in accordance with the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

Andrea Fontana and Nicola Carone declare that they are an Editorial Board Member of *Discover Psychology* and confirm that they were not involved in the handling or decision-making of their own submission.

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