Clinical Neuropsychiatry (2024) 21, 3, 217-224

RESEARCH PAPER

THE MEDIATING ROLE OF AFFECT DYSREGULATION AND DISSOCIATION IN THE RELATIONSHIP BETWEEN ATTACHMENT AND COMPULSIVE ONLINE SHOPPING: A PATH ANALYSIS MODEL

Eleonora Topino, Nicole Pallaoro, Miriam Moyano, Silvia Casale, Alessio Gori

Abstract

Objective: Online shopping has been described by the scientific literature both for its benefits and the potential risks when excessive usage is involved. Indeed, compulsive online shopping is commonly conceptualized as a potential behavioural addiction that substantially impacts the lives of individuals afflicted by it. In light of this, the present research aimed at exploring the association between possible risk and protective factors for compulsive online shopping, by specifically exploring the role of adult attachment, affect dysregulation, and dissociation.

Method: 285 participants (75% females, 25% males; M_{age} = 31.57, *SD* = 11.379) were involved in the research and completed an online survey. The collected data was analysed implementing a path analysis model.

Results: Results showed significant total effects in the relationship between secure/fearful attachment patterns and compulsive online shopping. Such associations were significantly mediated by the sequential effect of affect dysregulation and dissociation.

Conclusions: The present study provides useful information to guide tailored interventions concerning both preventive activity and clinical practice.

Key words: adult attachment, behavioural addiction, dissociation, affect dysregulation, online shopping, shopping addiction

Eleonora Topino[1], Nicole Pallaoro[2], Miriam Moyano[2], Silvia Casale[2], Alessio Gori[2,3]
[1] Department of Human Sciences, LUMSA University of Rome, Via della Traspontina 21, 00193 Rome, Italy.
[2] Department of Health Sciences, University of Florence, Via di San Salvi 12, Pad. 26, 50135 Florence, Italy;
[3] Integrated Psychodynamic Psychotherapy Institute (IPPI), via Ricasoli 32, 50122 Florence, Italy

OPEN ACCESS

Citation: Topino, E., Pallaoro, N., Moyano, M., Casale, S., Gori, A. (2024). The mediating role of Affect Dysregulation and Dissociation in the relationship between Attachment and Compulsive Online Shopping: A path analysis model. *Clinical Neuropsychiatry, 21*(3), 217-224.

doi.org/10.36131/cnfioritieditore20240307

Funding: None.

Competing interests: None.

Corresponding author
Alessio Gori
Department of Health Sciences, University of Florence, Via di San Salvi 12, Pad. 26, 50135 Firenze, Italy
E-mail: alessio.gori@unifi.it

1. Introduction

While not included in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM 5; American Psychiatric Association [APA], 2013, 2022), compulsive shopping is currently mentioned as an example of "other specified impulse control disorders" in the 11th revision of the International Classification of Diseases (ICD-11; World Health Organization [WHO], 2019). Indeed, the debate on the classification of certain problematic behaviours is still ongoing, partly due to insufficient peer-reviewed evidence regarding their aetiology, onset, and course, and partly due to the need to avoid over-pathologizing common behaviours (Kardefelt-Winther et al., 2017), as well as blindly associating dysregulated behaviours with addictions (Schimmenti, 2023). Concerning compulsive shopping, some researchers (*e.g.,* Potenza et al., 2018) suggest that compulsive shopping is better classified as an "other specified disorder due to addictive behaviours". Others rely on the components model of addiction (Griffiths, 2005) to delineate and assess the elements of the phenomenon that can be attributed to a behavioural addiction (Andreassen et al., 2015). Although the appropriate classification of this condition continues to be debated, scientific literature agrees that the disorder is characterised by an uncontrollable urge to acquire products or services, regardless of the actual need for them, with negative effects that become more evident and significant as it takes root in people's lives (Andreassen et al., 2015; Müller et al., 2015; Niedermoser et al., 2021). This behaviour can lead to the accumulation of unnecessary assets and, ultimately, to a series of social, familial, and financial problems (O'Guinn & Faber, 1989). Typical signs of this disorder include the loss of control over the consumption of goods, impulses, and extreme craving to shop, and the purchase of excess items without proper use, resulting in negative consequences such as indebtedness, family conflicts, emotional distress, shame, and remorse (Müller et al., 2022). Additionally, it's worth noting that compulsive shopping extends beyond brick-and-mortar stores. With the rise of e-commerce, online shopping has gained ground and given rise to the phenomenon of compulsive online shopping (COS; Rose & Dhandayudham, 2014). The

Submitted January 2024, accepted May 2024

online environment offers additional properties that can aggravate the compulsion, such as anonymity, lack of space-time limits and ease of access (Spada, 2014). This underlines the need to further study COS and its risk/protective factors (Müller et al., 2022). Given this framework, the general aim of this research is the exploration of the factors that may be associated with COS, with a specific focus on Adult Attachment, Affect Dysregulation, and Dissociation.

1.1 Adult Attachment and Compulsive Online Shopping

Attachment refers to a complex psychobiological bond established with caregivers, usually in early infancy (Tironi et al., 2021). Scientific literature has shown that there are several interactions between the vulnerability to addiction and an attachment style (Lewis et al., 2020). On one hand, previous research has highlighted that secure attachment may serve as an important base for developing protective factors against vulnerabilities to addiction, such as more effective emotional regulation abilities, higher self-esteem and more stable relationships (Giannini et al., 2011; Martín Quintana et al., 2023). On the other hand, individuals who have insecure attachment styles present a higher risk of developing mental disorders, including addictions (Estévez et al., 2017; Kobak & Bosmans, 2019; Rezaieh et al., 2023). In line with this perspective, previous research highlighted the role of secure and fearful attachment as protective/risk factors for the levels of COS (Topino et al., 2022), and this association can be explained as a maladaptive coping strategy used as a mean to escape negative emotions (Gori et al., 2023a,b).

1.2 The mediation of Affect Dysregulation and Dissociation in the relationship between Adult Attachment and Compulsive Online Shopping

Affect dysregulation refers to the difficulty in managing or regulating one's emotions (Helion et al., 2019). Its association with psychopathology is well-established (Sloan et al., 2017), as it is often seen as a core feature of various mental disorders, such as mood disorders, anxiety, trauma-induced disorders (Krupnik, 2021), and addiction (Caretti et al., 2018; Panayiotou et al., 2021). Furthermore, previous research supports the link between affect dysregulation and attachment, suggesting that the relationship with attachment figures can significantly influence the ability to regulate one's affection (Cooke et al., 2019). Indeed, evidence has shown that secure attachment is associated with effective affect regulation abilities, contrary to insecure attachment styles (Tironi et al., 2021). In turn, affect dysregulation was found to be a risk factor for the development of addictive behaviours, since substances or compulsive behaviours such as excessive internet use, gambling, or COS, may be used to regulate or escape from dysregulated emotions (Gori et al., 2022a; Meyer & Segal, 2023; Sloan et al., 2017). Indeed, the lack of internal regulatory abilities can lead to the research of external means to regulate states of distress (Gori et al., 2021, 2022a, 2023c). With the intention of alleviating internal distress, individuals could dissociate as a coping mechanism. From this perspective, dissociation can be seen as a defensive mechanism which can be described as an alteration of awareness states (Spiegel et al., 2013) and as a disruptive in normal consciousness and functions, including memory, motor skills and sense of self (Eşkisu et al., 2023). Furthermore, also for the development of dissociative experiences the contribution of insecure attachment was assessed, based on the assumption that attachment-related Internal Working Models regulate personal and interpersonal experiences and related emotions, functioning as a more or less stable structure for interpreting social interactions and personal affects (Liotti, 2006; Zimmermann, 1999). Since dissociation may act as a coping mechanism to escape negative emotions, it is often connected to addictive behaviours, in association with affect dysregulation (Lynn et al., 2022; Topino et al., 2021; Zdankiewicz-Ścigała & Ścigała, 2018). Consistently, Gori et al. (2022a) found that higher levels of alexithymia (*i.e.,* a manifestation of affect dysregulation) and dissociation were associated with a significant increase in online addictive behaviours.

1.3 The present research

Some authors conceptualize addiction as an attachment disorder (Flores, 2004), and COS can also be seen within this perspective. Additionally, existing research suggests that this association may involve the mediation of other factors (*e.g.,* Gori et al., 2022a), and understanding these patterns may favour deeper knowledge of this condition, thereby providing useful insights for clinical practice. Since previous evidence showed that insecure attachment may be responsible for low affect regulation and dissociation (Cooke et al., 2019; Liotti, 2006), a serial mediation model was implemented in the present study, to investigate the mediation of affect dysregulation and dissociation in the relationship between secure and fearful attachment styles and COS. Specifically, it was hypothesized that: a significant total effect would be found in the association of secure and fearful attachment patterns with Compulsive Online Shopping (**H1**); secure and fearful attachment patterns would be significantly related to affect dysregulation and dissociation, which are, in turn, significantly associated with one another (**H2**); affect dysregulation and dissociation would be significantly related to Compulsive Online Shopping (**H3**); affect dysregulation and dissociation would significantly mediate the relationship between secure and fearful attachment styles and Compulsive Online Shopping (**H4**).

2. Method

2.1 Participants, Procedure and Ethics

The research involved a sample of 285 participants (75% females, 25% males; M_{age} = 31.57, *SD* = 11.379) who declared to systematically engage in online shopping. As shown in **table 1**, the majority of participants were single (66%), students (39%), and held a university degree (46%). They were recruited online using a snowball sampling procedure, starting from the author's contacts and asking potential participants to share the survey with others. The administration took place through the Google Forms platform. Before starting, each participant received information about the research's general objectives and provided electronic informed consent. Privacy and anonymity were ensured. All procedures conducted in the study received approval from the institutional ethical committee of the last author.

Table 1. *Demographic characteristics of the sample (N = 285)*

Characteristics		*M* ± *SD*	*n*	%
Age (years)		31.57 ± 11.379		
Gender				
	Females		214	75.1
	Males		71	24.9
Marital Status				
	Single		188	66.0
	Married		51	17.9
	Cohabiting		36	12.6
	Separated		8	2.8
	Divorced		1	0.4
	Widowed		1	0.4
Education				
	Middle School diploma		8	2.8
	High School diploma		84	29.5
	University degree		132	46.3
	Master's degree		46	16.1
	Post-lauream specialization		15	5.3
Occupation				
	Student		110	38.6
	Working student		35	12.3
	Employee		84	29.5
	Freelance		20	7.0
	Manager		2	0.7
	Entrepreneur		5	1.8
	Trader		6	2.1
	Artisan		2	0.7
	Unemployed		16	5.6
	Retired		5	1.8

2.2. Measures

2.2.1 Compulsive Online Shopping

Compulsive Online Shopping was evaluated through the Compulsive Online Shopping Scale (COSS; Manchiraju et al., 2017; Italian version: Gori et al., 2022b). The scale is a self-report measure consisting of 28 items on a seven-point Likert scale (from 1 = "*Strongly Disagree*" to 7 = "*Strongly Agree*") and grouped into seven factors: Salience, Mood modification, Conflict, Tolerance, Relapse, Withdrawal, and Problems. The total score of the Italian version was used in the present research and showed excellent internal consistency (Cronbach's α value is 0.95).

2.2.2 Adult Attachment

Adult Attachment was evaluated through the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991; Italian version: Carli, 1995). The scale is a self-report measure consisting of 4 items on a seven-point Likert scale (from 1 = "*It does not describe me at all*" to 7 = "*It very much describes me*") and allows for the assessment of four styles: Secure, Dismissing, Preoccupied, and Fearful. The Italian version was used in the present research. Since the four attachment styles are assessed with a single item, the alpha coefficient cannot be calculated.

2.2.3 Affect dysregulation

Affect dysregulation was evaluated using the correspondent subscale of the *Seven Domains Addiction Scale* (7DAS), a separate self-report section of the Addictive Behaviour Questionnaire (ABQ; Caretti et al., 2018). The "Affect dysregulation" subscale is a self-report measure consisting of 7 items on a five-point Likert Scale (from 0 = "*Never*" to 4 = "*Always*"). The original (Italian) version was used in the present research and showed good internal consistency (Cronbach's α value is 0.86).

2.2.4 Dissociation

Dissociation was evaluated through the Dissociative Experiences Scale-II (DES-II; Carlson & Putnam, 1993; Italian version: Schimmenti, 2016). The scale is a self-report measure consisting of 28 items on an eleven-point Likert scale (from 0% = "*Never*" to 100% = "*Always*") grouped into three subscales: 1) dissociative amnesia; 2) absorption and imaginative involvement; 3) depersonalization-derealization. The total score of the Italian version was used in the present research and showed excellent internal consistency (Cronbach's α value is 0.95).

2.3 Data analysis

The SPSS (v. 21.0; IBM, New York, USA) and AMOS (v. 24.0; IBM, New York, USA) software for Windows were used to analyse data. Descriptive statistics have been calculated and Pearson's *r* correlations were implemented to explore the associations between the

variables. The path modelling approach (Bollen & Long, 1993) was used to test the hypothesized model. The model's statistical fit was assessed by examining the following goodness-of-fit indicators: the model Chi-square (χ^2), where $p > 0.05$ suggests a good fit (Hu & Bentler, 1999); the goodness of fit (GFI), normed-fit index (NFI), and Comparative Fit Index (CFI), with values exceeding 0.90 indicating a good fit (Byrne, 1994; McDonald & Ho, 2002; Kline, 2015); the standardized root mean square residual (SRMR), with values below 0.08 signifying reasonable fit (Fabrigar et al., 1999). Finally, the statistical stability of the models was tested by performing the bootstrapping procedure at 95 % bootstrap confidence interval (CI), based on 5000 resamples: if the interval (from boot Lower Limit Confidence Interval [LLCI] to boot Upper Limit Confidence Interval [ULCI]) does not include zero, the indirect effect is considered to be statistically significant (Preacher & Hayes, 2008).

3. Results

Descriptive statistics of the study variables are shown in **table 1**. Correlation analysis (**table 2**) highlighted a significant and negative association between COS and secure attachment (r = -0.157, $p < 0.01$). Furthermore, COS was significantly and positively correlated with fearful attachment ($r = 0.193$, $p < 0.01$), affect dysregulation ($r = 0.364$, $p < 0.01$), and dissociation ($r = 0.419$, $p < 0.01$).

Table 2. *Correlation matrix*

	1	2	3	4	5	6	7
1. Compulsive Online Shopping	--						
2. Secure Attachment	**-0.157****	--					
3. Preoccupied Attachment	0.103	**-0.298****	--				
4. Fearful Attachment	**0.193****	**-0.149***	**0.282****	--			
5. Dismissing Attachment	0.040	**-0.265****	**0.117***	0.046	--		
6. Affect Dysregulation	**0.364****	**-0.294****	**0.336****	**0.314****	0.022	--	
7. Dissociation	**0.419****	**-0.230****	**0.169****	**0.262****	**0.145***	**0.344****	--

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Based on the regression analysis, secure and fearful attachment styles were the only patterns included in the path analysis. The mediation consequential of affect dysregulation and dissociation in the relationship between secure/fearful attachment patterns and compulsive online shopping was tested (see **figure 2**). The emerging multiple mediation model showed a good fit to the data. Although the chi-square was significant (χ^2= 16.230, $p < 0.001$), the other indices showed acceptable values: GFI = 0.978, NFI = 0.910, CFI = 0.911, SRMR = 0.049.

Specifically, a significant total effect was found in the relationship between secure and fearful attachment patterns and compulsive online shopping ($\beta = -0.13$, $p < 0.01$ and $\beta = 0.17$, $p < 0.01$, respectively). Secure and fearful attachment patterns were also significantly associated with affect dysregulation ($\beta = -0.25$, $p < 0.001$ and $\beta = 0.28$, $p < 0.001$, respectively). Affect dysregulation was significantly and positively related to dissociation ($\beta = 0.26$, $p < 0.001$), which, in turn, was significantly and positively associated with compulsive online shopping ($\beta = 0.39$, $p < 0.001$). When included in the model, affect dysregulation and dissociation totally mediated the association between preoccupied and fearful attachment patterns and COS, which in turn cause non-significant direct effects ($\beta = -0.06$, $p = 0.276$ and $\beta = 0.08$, $p = 0.141$, respectively).

The bootstrapping procedure confirmed the statistical stability of the multiple mediation model (see **table 3**).

4. Discussion

In the last decades, internet use has been integrated into our daily life changing many aspects, such as becoming one of the principal means that mediates social interactions and offering new platforms where consumers may shop daily (Adamczyk, 2021). As this phenomenon grows, related addictive behaviours and associated psychopathological features must be assessed. Indeed, with the escalating diffusion of the Internet and the expeditious surge in e-commerce activities, there has been an increasing recognition in previous studies regarding the imperative necessity to delve into and examine conditions that may be associated with compulsive online shopping, underlining the evolving dynamics of consumer behaviour in the digital age (Gori et al., 2022a; Müller et al., 2019; Rose & Dhandayudham, 2014). Within this framework, the present research aimed at exploring the associations among the factors that may be related to Compulsive Online Shopping, specifically focusing on Adult Attachment, Affect Dysregulation, and Dissociation.

A significant total effect in the relationship between fearful and secure attachment patterns and compulsive online shopping was found (**H1 was supported**). Such results align with empirical evidence on the role of attachment. On one hand, secure attachment has been repeatedly conceptualized as a protective factor against psychopathology and a core feature of resilience (see Darling Rasmussen et al., 2019 for a meta-analysis). Consistently, previous research showed significant negative associations between secure attachment and substance use disorders (see Schindler, 2019 for a review) or behavioural addiction, including those related to problematic internet use (Estevez et al., 2019; Estévez et al., 2022). On the other hand, insecure attachment was found to be a transdiagnostic risk factor for mental illness (see Herstell et al., 2021 for a meta-analysis). Specifically, fearful attachment style was significantly and positively related to addictive disorders (*e.g.,* Nakhoul et al., 2020; Topino et al., 2023), including compulsive online shopping (Topino et al., 2022).

Furthermore, fearful and secure attachment styles were significantly associated with both affect dysregulation and dissociation, which have also been significantly linked to each other (**H2 was supported**).

Figure 1. *The path analysis model*

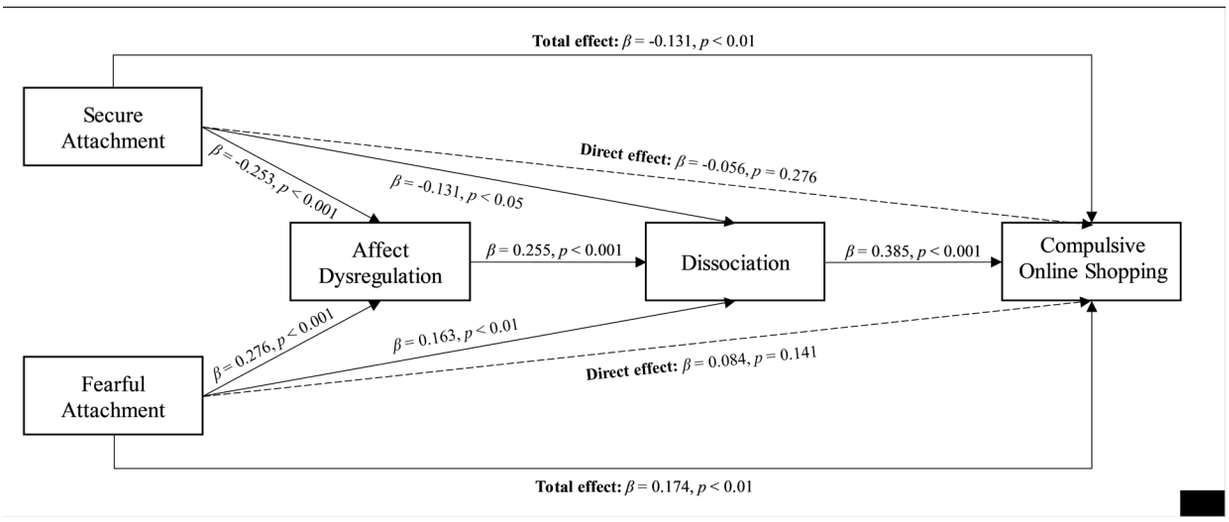

Table 3. *Coefficients of the path analysis*

	Estimate	SE	*p*	BootLLCI	BootULCI
Total effects					
Secure Attachment → Compulsive Online Shopping	-0.131	0.023	< 0.01	-0.104	-0.016
Fearful Attachment → Compulsive Online Shopping	0.174	0.03	< 0.01	0.041	0.160
Direct effects					
Secure Attachment → Compulsive Online Shopping	-0.056	0.052	0.276	-0.160	0.042
Fearful Attachment → Compulsive Online Shopping	0.084	0.055	0.141	-0.027	0.190
Indirect effects					
Secure Attachment → Compulsive Online Shopping	-0.075	0.025	< 0.001	-0.129	-0.031
Fearful Attachment → Compulsive Online Shopping	0.090	0.027	< 0.001	0.045	0.152

This is consistent with the perspective that a child's emotional regulatory system is formed beginning with attachment relationships (Cooke et al., 2019; Tironi et al., 2021; Zimmermann, 1999), and affect dysregulation is at least in part a consequence of disturbed relationships with caregivers (Cooke et al., 2019; Topino et al., 2022). In line with this, dissociation can be seen in light of its function and clinical interpretation (Schimmenti, 2022). Indeed, it is not inherently negative and can serve as a strategy for managing dysregulated internal states (Butler, 2006). However, if it becomes the main regulatory strategy at the expense of more effective ones, dissociation can become a significant risk factor for psychopathology (Loewenstein, 2018; Moskowitz et al., 2019) and addiction (Guglielmucci et al., 2019).

Indeed, affect dysregulation and dissociation were significantly and positively related to compulsive online shopping (**H3 was supported**). These data suggest the presence of significant connections between how individuals regulate their emotions, experience dissociation, and their inclination to engage in compulsive online shopping (Chen et al., 2004; Rose & Dhandayudham, 2014; Zdankiewicz-Ścigała & Ścigała, 2018). Within this framework, addictions can be seen as dissociative strategies implemented in individuals who have not acquired functional affective regulation strategies in the relationship with the caregiver, with the aim of finding external regulators of dysregulated internal emotional experiences (Caretti et al., 2018; Gori et al., 2022a, 2023c). Consistently, some addiction research supports the associations confirmed in these results (e.g., Zdankiewicz-Ścigała & Ścigała, 2018).

Finally, the most relevant finding of the present study is related to the mediating role of affect dysregulation and dissociation in the relationship between secure and fearful attachment styles and Compulsive Online Shopping (**H4 was supported**). The inclusion of these variables totally mediated the relationship between attachment and Compulsive Online Shopping, and this further highlighted the significance of the contribution of affect dysregulation and dissociation within this model. Such findings contribute to the growing body of research supporting the significance of understanding the association between insecure attachment and psychopathology not only as a direct pathway, but also as a link involving chained reactions of other intervening factors (e.g., Tironi et al., 2021). Specifically, these obtained results underscore the importance of considering affective and dissociative factors in understanding the underlying dynamics of compulsive online shopping behaviours in individuals with different attachment styles (Gori et al., 2022a; Meyer & Segal, 2023).

Although this research provides useful contributions to improve knowledge on associations between attachment, affect regulation, dissociation, and compulsive online shopping, certain limitations need to be addressed for future research. Firstly, the cross-sectional design does not allow for the evaluation of temporal precedence and causal inferences. Hence, a suggestion for future research could be to conduct a longitudinal study that follows participants over time, allowing for the assessment of the relationship between variables over time and providing a deeper

understanding of the causal dynamics between attachment, affect regulation, dissociation and compulsive online shopping. Also, self-report measures were used to collect the data. The reliance on self-report measures introduces the potential for response bias and may not fully capture the complexity of individuals' experiences. To address this limitation, future research could incorporate a multi-method approach, combining self-report measures with objective assessments or behavioural observations to enhance the validity and comprehensiveness of the data collection process. Finally, the research involved individuals who engaged in online shopping and did not include a clinical sample. Therefore, the findings may not fully capture the complexities of compulsive online shopping behaviours within clinical populations. Expanding the participant pool to include clinical samples would provide valuable insights into the specific characteristics and mechanisms underlying compulsive online shopping behaviour within clinical populations.

5. Conclusions

Scientific literature underscores the duality of shopping on the Internet, which presents significant benefits but also entails potential risks when excessive usage is involved (Elshaer et al., 2023; Müller et al., 2022; Spada, 2014). The present research specifically focuses on the antecedent of compulsive online shopping, by specifically considering attachment, affect dysregulation, and dissociation. Firstly, the protective role of secure attachment is supported on the one hand, and the fearful pattern is highlighted as an element of risk on the other. This data has practical implications in guiding the clinical process, confirming the potential of attachment theory in the treatment of addictions (Fletcher et al., 2015). Moreover, the present study highlights the role of affect dysregulation and dissociation as significant predictors of COS. Such data supports the need not to neglect these factors for effective treatment, in line with previous evidence that associates these elements with a greater risk of relapse (Kopera et al., 2015; Noël et al., 2018; Ottonello et al., 2019). In conclusion, the identification and management of these and other risk factors are increasingly relevant research focus. This is essential for promoting a balanced, healthy, and responsible utilization of the opportunities afforded by the Internet. Through targeted interventions, education, and proactive measures, individuals can develop strategies to navigate the digital landscape effectively, limiting the risk of compromising their overall well-being and quality of life.

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