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Failure in reflective functioning as a key factor in the association between problematic social networking sites use, attachment and childhood maltreatment: A network analysis approach on gender differences

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Abstract

Following a network analysis approach, the present study aims to explore the pattern of mutual relationships between failure in reflective functioning (RF) – defined as hypomentalization – problematic social networking sites use (PSNSU), attachment anxiety and avoidance, and childhood maltreatment among emerging adults, with a focus on gender differences. The study sample comprises $N = 1,614$ emerging adults ($M_{\text{age}} = 23.84$; $SD = 3.21$; 50% identified themselves as women) who completed online self-assessment measures. Results showed significantly greater PSNSU, hypomentalization, childhood emotional abuse, and both attachment avoidance and anxiety among women. Indeed, within the network analysis, performed separately for men and women, network-specific associative patterns were observed; yet also similarities have emerged. Within the women's network, differently from males, attachment avoidance connects, through attachment anxiety, to emotional abuse, mood modification related to PSNSU, and hypomentalization. Nonetheless, hypomentalization was central in both networks, functioning as a hub between attachment anxiety, the PSNSU cluster, and the childhood maltreatment cluster. These results shed light on the use of social network sites as a potential maladaptive emotion regulation strategy, particularly among women. In this regard, the role of RF should be considered as a key treatment target to reduce PSNSU and support the use of adaptive emotion regulation strategies.

Keywords: reflective functioning; attachment; problematic social networking sites use; childhood maltreatment; gender differences

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Introduction

Emerging adulthood is a critical period of transition, generally characterized by feeling “in-between”, thus no longer an adolescent but not yet an adult (Galica et al., 2017; Munsey, 2006; Prensky, 2001). Today's emerging adults, who correspond to the 18–30 age group – also called “digital natives” (Prensky, 2001) or “millennials” (Kurz et al., 2019) – are increasingly engaged with social networking sites (SNSs) for enhancing social interactions and learning opportunities (Galica et al., 2017). Despite the many advantages, there is a growing concern over the problematic use of SNSs (PSNSU), which can undermine individuals' adaptation abilities (Andreassen & Pallesen, 2014).

The term PSNSU describes an excessive worry related to the use of SNSs, for which individuals tend to spend much time and effort, showing a high motivation and desire toward their use, ultimately

leading to impairment in their life functioning (Andreassen & Pallesen, 2014). Individuals exhibiting PSNSU often report addiction-like symptoms, such as loss of control, salience, tolerance, mood modification, conflict, and withdrawal (Andreassen, 2015). However, it should be noted that, although some scholars consider PSNSU as a new form of behavioral addiction (Ceranic, 2013), it has not yet been recognized as a diagnostic label within the diagnostic manuals (i.e., Diagnostic and Statistical Manual of Mental Disorders–DSM-5 and the International Classification of Diseases 11th Revision–ICD-11). Moreover, there is still no common consensus in the literature on the signs and symptoms associated with PSNSU, although it is a topic that is receiving increasing attention from researchers.

According to the compensatory model of problematic Internet use (Kardesfelt-Winther, 2014), motivations for PSNSU represent unfulfilled needs or psychosocial difficulties (Musetti, Grazia, et al., 2022; Musetti et al., 2021). Although PSNSU might lead to negative psychological consequences, the behavior is strengthened through negative reinforcement, as individuals might tend to engage in it in order to relieve negative affect and compensate for the emotional turmoil associated with stressful situations (Billieux et al., 2015; Boursier et al., 2020). Past research has shown that the use of SNSs

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might be a way of evading feelings of loneliness while neglecting interpersonal relationships even more, which might then increase such feelings (Chirico et al., 2022) and lead to ineffective emotion regulation attempts. In other words, some emerging adults can excessively use SNSs in an attempt to regulate negative affect. The immediate emotional gratification provided by SNSs (e.g., receiving likes) and the ease with which these online platforms can be accessed may greatly contribute to their appeal as emotion regulation tools, but this can result in a vicious cycle that can exacerbate the difficulty in regulating emotions. In this context, several factors may be considered as antecedents of SNSs use. In particular, individual attachment style, a relatively stable relational disposition derived from early childhood experiences with the caregiver, can greatly influence the capacity for adaptive emotion regulation (Atzil et al., 2018; Beckes et al., 2015). In this regard, individuals' attachment styles can influence the chance of developing problematic online behaviors, including PSNSU (Musetti, Manari, et al., 2022). Extending attachment theory to adult relationships, four categories of adult attachment were identified (i.e., secure, preoccupied, fearful, and dismissing attachment styles) characterized by two underlying dimensions (i.e., attachment anxiety and attachment avoidance) (Bartholomew & Horowitz, 1991). Individuals high in attachment anxiety generally present a negative self-view, a strong desire for closeness and intimacy, and a fear of rejection, which leads them to be more likely to use hyperactivating regulation strategies (e.g., dysfunctional rumination). Individuals high in attachment avoidance instead show a negative view of others, a self-confident appearance, and discomfort with closeness and intimacy, which makes them more prone to adopt deactivating strategies aimed at maintaining distance and lowering arousal (e.g., denial of their need for help) (Bartholomew & Horowitz, 1991).

Moreover, the literature has highlighted how insecure attachment results from a disruption in early attachment relationships, such as exposure to childhood maltreatment. Childhood maltreatment can subsequently hinder the individual capacity for adaptive emotion regulation leading to increased mental and physical health problems in adulthood (Banker et al., 2019). Indeed, those experiencing maltreatment at an early age show a higher risk for difficulties in coping with and responding to life stressors (Banker et al., 2019). Five main types of childhood maltreatment have been identified: physical abuse (i.e., any form of physical violence purposefully inflicted on the child by the caregivers), physical neglect (i.e., the failure or inability of caregivers to provide for the child's basic physical needs), sexual abuse (i.e., the involvement of a child in sexual activities), emotional abuse (i.e., a pattern of deliberate acts by caregivers, which interferes with the child's mental health or emotional development), and emotional neglect (i.e., serious omissions and shortcomings of caregivers in their child's care, leading to severe deprivation hindering the child's development) (Substance Abuse and Mental Health Services Administration, 2022). Previous studies have shown that individuals with a history of emotional maltreatment may seek to address their social, emotional and/or psychological problems derived from these adverse childhood experiences (Maguire et al., 2015) through the use of SNSs (Kircaburun et al., 2020). Nonetheless, childhood maltreatment has been found to be a risk factor for problematic online behaviors, such as PSNSU (Kircaburun et al., 2020).

A pivotal link in this chain of factors contributing to PSNSU could be reflective functioning (RF), which regards the understanding and interpretation of one's own and other's behaviors as an expression of mental states (e.g., feelings, thoughts, attitudes,

desires), essential for an adaptive emotion regulation and social adaptation (Fonagy & Allison, 2011). Childhood maltreatment and insecure attachment can impair RF, leading to addictive behaviors (Borghesi et al., 2022; Terrone et al., 2021). Specifically, failure in RF are typically described as *hypomentalization* (i.e., the uncertainty about the mental states of oneself or others), which can foster PSNSU, given the presence of communication barriers in the online world (Imperato et al., 2022).

Still, the association between PSNSU, attachment, childhood maltreatment, and RF has been mainly investigated among children and adolescents (Maguire et al., 2015), thus data pertaining to emerging adults as well as gender-based differences are still lacking. In this context, the only widely recognized gender-based differences among adults are related to attachment, with women generally displaying higher attachment anxiety and men having higher attachment avoidance (Bartholomew & Horowitz, 1991). As such, it can be expected that individual attachment is related to the way people use and deal with SNSs. Indeed, previous studies have shown that women with high attachment anxiety report higher levels of PSNSU and different motivations for using SNSs, compared to men (Krasnova et al., 2017). Moreover, women display a greater SNSs use overall (Krasnova et al., 2017) and, in line with their higher attachment anxiety (Haydon et al., 2014), they tend to use SNSs mainly to satisfy relational needs associated with closeness and intimacy (Mancinelli et al., 2019), and to maintain and foster interpersonal relationships (Krasnova et al., 2017). Instead, men appear to use SNSs mainly to gain general information, play video games and establish *online* relationships instead of *offline* ones (Mancinelli et al., 2019), which is coherent with their reported attachment avoidance traits (Del Giudice, 2011; Pew Research Center, 2018).

The current study

Keeping in mind the state-of-the-art outlined above, the current study aims to exploratorily investigate and compare the pattern of mutual relationships between PSNSU symptoms, insecure attachment (i.e., attachment anxiety and avoidance), childhood maltreatment and failure in RF (i.e., hypomentalization) among emerging adults and comparing those identifying as men *vs.* women by relying on a network analysis approach. To current knowledge, this is the first study that investigates the interplay between these variables altogether among emerging adults. Moreover, the adoption of a network perspective is expected to provide insights relevant to both research and clinical practice, allowing the identification of the most central and influential variables within their mutual associative pattern. Borsboom (2017), who was the first to introduce the network analysis method to psychology, assumed that mental phenomena should be conceptualized as dynamic processes and not as a crystallized reality since signs and symptoms are not the cause of a latent construct, but a constituent of it. In line with this perspective, the investigation of the pattern of mutual relationships among the considered variables is expected to provide a deeper understanding of PSNSU, thereby informing on potential targets for clinical interventions to ultimately reduce and/or prevent PSNSU among digital natives.

Method

Participants and procedure

Participants were recruited using the snowball sampling technique, which consists of sharing the online questionnaire's link through

SNSs platforms (e.g., Facebook); such technique is an enrollment method in which participants themselves allow the additional recruitment of participants by sharing the questionnaire's link to their social network, thereby creating a "snowball effect". Prior to beginning the online survey, participants were asked to read and sign both the informative sheet and the informed consent regarding the present study. The data collection was anonymous, and no reward was given for taking part in the study. The study was approved by the Research Ethics Board of the University of Parma (protocol code: 119094), and was conducted following the Declaration of Helsinki and its subsequent amendments (World Medical Association, 2001).

In line with the American Psychological Association's (APA) guidelines (APA, 2022), participants were asked to which gender they identified with, thus when writing "gender", "male" and "female" we here refer to participants' gender identity and not specifically the sex assigned at birth. The initial sample consisted of $N = 2,466$ participants (67.28% identified as women; 32.73% identified as men; 0.73% identified as "other", including people that did not want to specify their gender identity, those identifying as transgender, non-binary, queer or questioning) aged between 18 and 30 years. However, given the unbalanced gender identity distribution, participants who identified as "other" were excluded and a subsample of woman participants was extracted from the initial sample to match the subsample of men. The two groups were balanced by numerosity, age, family/relationship status, employment status, and nationality. The extracted subsample of women did not statistically differ from the excluded woman participants as regards educational level, occupation, relationship status, or nationality. The extracted subsample of women statistically differed from the excluded participants in terms of age; that is, the final sample of women resulted to be slightly older compared to the excluded group ($M_{\text{age}} = 23.40$ years, $M_{\text{age}} = 23.70$ years, respectively; see Supplementary materials Table S1). The final sample consists of $N = 1,614$ participants aged between 18 and 30 years ($M_{\text{age}} = 23.84$; $SD = 3.21$, 50% identified themselves as women), and most of them are Italian ($n = 1,570$, 97.3%). Moreover, the highest percentage of participants are full-time university students ($n = 739$, 45.8%), followed by public employees ($n = 390$, 24.2%), working students ($n = 330$, 20.4%), unemployed ($n = 80$, 5%) and self-employed ($n = 75$, 4.6%) individuals. Furthermore, the highest percentages of the sample reported being single ($n = 799$, 49.5%) or in a romantic relationship ($n = 667$, 41.3%) while $n = 147$ (9.1%) indicated having a live-in partner and $n = 1$ (0.1%) to be divorced.

Measures

Bergen Social Media Addiction Scale

The Bergen Social Media Addiction Scale (BSMAS; Andreassen et al., 2016; Monacis et al., 2017) is a self-report tool measuring PSNSU symptoms (i.e., salience, tolerance/craving, mood modification, relapse/loss of control, withdrawal, and conflict/functional impairment). The scale consists of 6 items rated on a 5-point Likert scale, from 1 "very rarely" to 5 "very often". In line with the aim of the present study, the single items of this scale were used as they outline addiction-like symptoms capturing the different nuances of PSNSU. The items are the following: During the past year with what frequency "have you spent a lot of time thinking about social media or planning to use it?" (Item 1), "have you felt the need to use social media more and more?" (Item 2), "have you used social media to forget your personal problems?" (Item 3), "have you

tried to stop using social media without succeeding?" (Item 4), "did you become anxious or agitated when prohibited from using social media?" (Item 5), "have you used social media so much that its use has had a negative impact on your work/studies?" (Item 6). The BSMAS has been back translated into Italian, showing acceptable psychometric properties (Monacis et al., 2017). In the present study, the McDonald's ω of the total score is equal to 0.82.

Childhood Trauma Questionnaire

The Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003; Sacchi et al., 2018) is a brief screening measure to assess retrospective experiences of abuse and neglect in childhood and adolescence. The questionnaire consists of 28 items rated on a 5-point Likert scale, from 1 "never" to 5 "very often". The CTQ comprises 6 subscales: (i) emotional abuse, (ii) physical abuse, (iii) sexual abuse, (iv) emotional neglect, and (v) physical neglect, each with scores ranging from 5 to 25. The CTQ has been back translated into Italian and has shown good psychometric properties (Sacchi et al., 2018). Indeed, in the present study, the McDonald's ω of the subscales were: emotional abuse = 0.89, physical abuse = 0.88, sexual abuse = 0.94, emotional neglect = 0.90, and physical neglect = 0.72.

Reflective Functioning Questionnaire

The Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016; Morandotti et al., 2018) is a brief self-report measure evaluating the degrees of uncertainty (RFQ_U) and certainty (RFQ_C) related to the mental states of oneself and others. Both scales comprise 6 items, each rated on a 7-point Likert scale, from 1 "completely disagree" to 7 "completely agree". In line with the aim of the present study, only the RFQ_U scale was used. The RFQ_U items has been rescored in order to indicate high scores of uncertainties about mental states, which could reflect hypomen-talization (Fonagy et al., 2016). The Italian version of the RFQ showed good internal consistency and reliability (Morandotti et al., 2018). In the present study, the McDonald's ω of the RFQ_U scale was 0.75.

Relationship Questionnaire

The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991; Carli, 1995) is a brief self-report assessing adult attachment. It includes four sentences, each describing a prototypical attachment attitude (secure, fearful, preoccupied, and dismissing). Participants were asked to select the description that best suited them on a 7-point Likert scale from 1 "It does not describe me at all" to 7 "It very much describes me". Higher positive scores refer to greater attachment anxiety or avoidance.

Data analysis

The statistical analyses were carried out using both SPSS v.20 (IBM Corp, 2016) and RStudio software (RStudio Team, 2020). Descriptive statistics were computed, and bivariate Pearson's r correlations were conducted separately for women and men ($p < .05$). A two-tailed independent sample t -test ($p < .05$) was performed to compare women and men in all the considered variables.

Using the R package *qgraph* (Epskamp et al., 2012), two Network Analyses (NA) were performed, separately for women and men. Variables are visualized as nodes in the weighted networks, and the edges are the regularized partial correlations that connect the nodes. The edges' thickness reflects the strength of the

links (i.e., effect size) and they are colored red for negative partial correlations while green for positive partial correlations.

The Graphical Gaussian Model was employed to perform the NA relying on the Graphical Least Absolute Shrinkage and Selection Operator (GLASSO) algorithms, which provides a more parsimonious network that maximizes the number of edges representing the “true” model (i.e., a network that reflect empirically pertinent links) (Epskamp et al., 2017; Hevey, 2018). The Extended Bayesian Information Criterion (EBIC; Friedman et al., 2014) was applied, which allows the selection of the model that more accurately recognizes the “true” model: the tuning parameter was set to $BIC = 0.25$. For sparse graphs, it has been demonstrated that networks estimated using GLASSO together with EBIC optimize the proportion of correctly identified edges to all edges (Epskamp & Fried, 2018).

Centrality indices (i.e., degree, strength, closeness and betweenness) were evaluated in order to investigate the importance of each node within the networks (Hevey, 2018). The centrality indices are represented as *z-points* and should be higher than 1 for a node to be considered central within the network. Overall, the higher these indices are, the greater the centrality of a node and thus its ability to influence the entire network. More specifically, the *degree* index regards the total number of direct connections of a node. The *strength* index provides information about the relative importance a node has within the network, regardless of the number of connections it possesses. Consequently, the higher the strength value a node has, the more is its ability to influence other nodes. The *closeness* index concerns the overall amount of direct and indirect connections of a node, which allows one to understand how quickly a node will be affected by variations in the other nodes. The *betweenness* index, on the other hand, represents the importance of a node in the average path between two nodes.

The stability of the two networks was estimated by computing the Centrality Stability coefficient (CS) derived by a non-parametric case-dropping subset applied to the weighted edges (N boots = 2,500). The CS indicates the maximum drop deemed acceptable to preserve a minimum correlation strength of 0.70 when comparing the newly estimated indices with the original ones. The CS is considered good when it is greater than 0.50 and ideal if it is higher than 0.70.

The Network Comparison Test (NCT; van Borkulo et al., 2022) was then computed to compare the two networks (females vs. males). The NCT is based on permutations and evaluates the global strength (i.e., the absolute sum of all network’s weighted edges) as well as the network structure invariance. In the current study, 2,500 permutations were computed, and the reference distribution was compared with the original test statistics to assess significance ($p < .05$).

The terms “impact”, “affect”, and “influence” will be used to describe the regularized partial correlation between variables, yet not to imply causal relationships.

Results

Descriptive statistics

Within the Supplementary materials (Table S1) are reported the *t*-test results comparing the excluded and the included woman subsamples. Only two significant differences emerged, one previously reported, that is the final sample of women was slightly older than the excluded group and, the other, concerns the loss of

Table 1. Descriptive statistics [M (SD)] and independent-samples *t*-test ($N = 1,614$)

	Women	Men	<i>t</i>	
	($n = 807$)	($n = 807$)	($df = 1,612$)	<i>p</i>
Age	23.73 (3.12)	23.96 (3.29)	1.43	0.15
BSMAS 1	2.92 (1.18)	2.70 (1.17)	-3.77	<.001
BSMAS 2	2.80 (1.22)	2.50 (1.17)	-5.03	<.001
BSMAS 3	2.63 (1.32)	2.25 (1.24)	-6.09	<.001
BSMAS 4	2.13 (1.18)	1.94 (1.09)	-3.41	<.001
BSMAS 5	1.69 (1.01)	1.59 (0.94)	-2.15	<.05
BSMAS 6	2.01 (1.19)	2.02 (1.17)	0.19	0.85
RFQ_U	3.60 (3.71)	3.17 (3.34)	-2.43	<.001
Emotional abuse	8.28 (4.28)	7.64 (3.72)	-3.21	<.001
Physical abuse	5.98 (2.52)	6.13 (2.49)	1.17	0.24
Sexual abuse	5.82 (2.61)	5.60 (2.31)	-1.82	0.70
Emotional neglect	10.42 (4.61)	10.43 (4.36)	0.07	0.94
Physical neglect	6.32 (2.10)	6.77 (2.48)	3.93	<.001
Attachment anxiety	-0.15 (4.22)	-1.17 (4.00)	-4.99	<.001
Attachment avoidance	0.66 (3.86)	0.22 (3.95)	-2.30	<.05

Note. BSMAS = Bergen Social Media Addiction Scale; BSMAS 1 = salience of SNSs; BSMAS 2 = tolerance/craving toward SNSs use; BSMAS 3 = mood modification associated to SNSs use; BSMAS 4 = loss of control toward SNSs use; BSMAS 5 = withdrawal related to SNSs use; BSMAS 6 = functional impairment derived from excessive SNSs use; RFQ_U = Reflective Functioning Questionnaire Uncertainty.

control towards the use of SNS (i.e., BSMAS 4), which was slightly higher among the subsample of women included.

Table 1 shows the descriptive statistics of the study variables and the independent-samples *t*-tests calculated on the included women vs. men.

The results indicate that women, compared to men, scored significantly higher in all the BSMAS variables, except for the one regarding functional impairment associated with SNSs use (i.e., BSMAS 6). Women also scored significantly higher on the RFQ_U, emotional abuse and both attachment avoidance and attachment anxiety while males significantly higher on physical neglect.

Bivariate Pearson’s correlations assessed on women and men separately are reported in the Supplementary Materials (Table S2).

Network analysis

The matrix of regularized partial correlations is reported in the Supplementary Materials (Table S3, Table S4).

Network structure: women

Figure 1 shows the network structure of the women group. The strongest positive connections were identified between attachment anxiety and RFQ_U (0.18), emotional abuse and RFQ_U (0.14) and, lastly, mood modification related to SNSs use (BSMAS 3) and attachment anxiety (0.08). Accordingly, Figure 1 highlights that although the CTQ factors have clustered and so have the single BSMAS items, the two clusters are connected through the RFQ_U and attachment anxiety. The latter two are both directly connected with emotional abuse and mood modifications related to SNSs use (BSMAS 3). RFQ_U also displays a connection with the functional impairment derived from excessive SNSs use (BSMAS 6). Finally, it

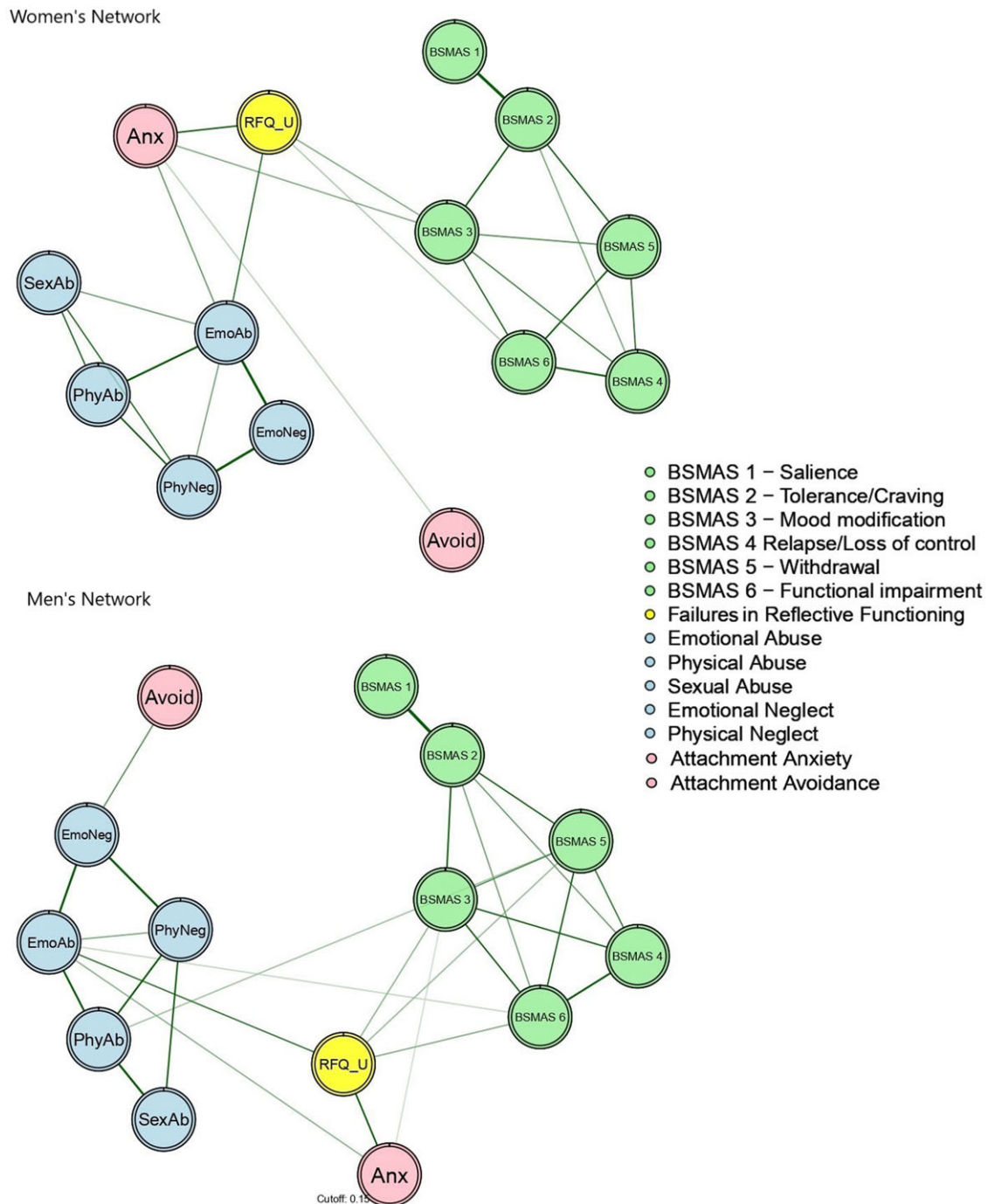


Figure 1. Women's and men's network structure.

is interesting to note that attachment avoidance is only connected to attachment anxiety.

In line with these results, the centrality indices (Figure 2) show that the mood modification related to SNSs use (BSMAS 3) presents the highest betweenness index ($M = 2.1$), followed by emotional abuse ($M = 1.88$), RFQ_U ($M = 1.38$) and attachment anxiety ($M = 0.80$). RFQ_U ($M = 1.27$), which showed the highest closeness index, followed by attachment anxiety ($M = 1.02$). Instead, the highest strength index belongs to emotional abuse ($M = 1.65$), followed by tolerance/craving toward SNSs use (BSMAS 2; $M = 1.07$).

Network structure: men

Figure 1 shows the network structure of the men group. As per the female group, the strongest positive connections were detected between attachment anxiety and RFQ_U (0.22), emotional abuse and RFQ_U (0.13) and, differently from women, between emotional neglect and attachment avoidance (0.10). Akin to the women's network, the clusters created by the individual BSMAS items and, separately, the CTQ variables, are connected through the RFQ_U variable and attachment anxiety. In this regard, attachment anxiety and RFQ_U are both linked to emotional abuse and mood modification related to SNSs use (BSMAS 3). RFQ_U is

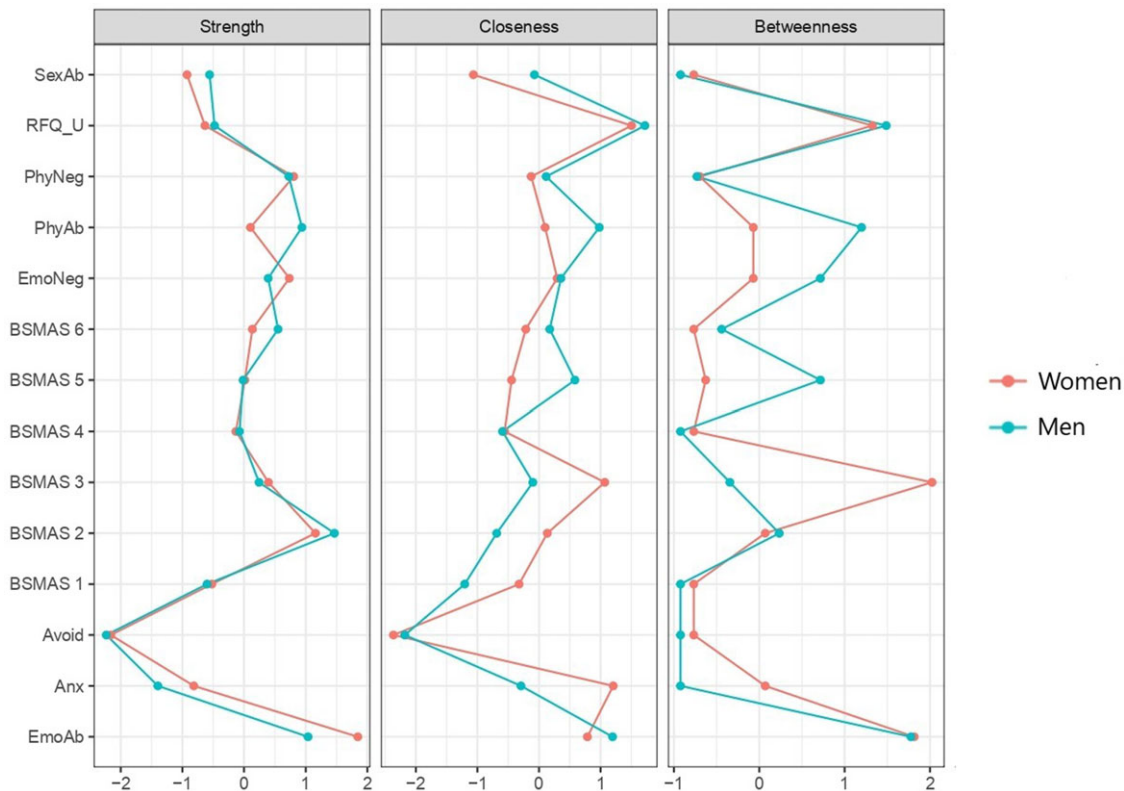


Figure 2. Women's and men's joint centrality indices plot.

also associated with functional impairment (BSMAS 6) and withdrawal (BSMAS 5) related to excessive SNSs use, with the latter further connected with physical abuse. Finally, it is worth noting that in the men group, differently from the women group, attachment avoidance is only associated with emotional neglect.

Regarding the centrality indices (Figure 2), emotional abuse showed the highest betweenness index ($M = 1.84$), followed by RFQ_U ($M = 1.54$), physical abuse ($M = 1.24$) and attachment anxiety ($M = 0.96$), albeit the latter is slightly below 1. RFQ_U presented the highest closeness index ($M = 1.55$), followed by emotional abuse ($M = 1.07$). Lastly, tolerance/craving toward SNSs use (BSMAS 2; $M = 1.47$) presents the highest strength index within the network, followed by emotional abuse ($M = 1.04$).

Comparison between the women's and men's network

The NCT was employed to further investigate gender differences by comparing the cumulative strength of the edges within the network and the overall network structures. The visual comparison of men's and women's networks already highlights potentially significant differences between the two network structures. This was indeed supported by the NCT results showing that both network structures ($M = 0.20$, $p = 0.04$) and the overall global strength ($S = 0.97$, $p = 0.003$) of the two groups were significantly different. More specifically, the global strength was significantly higher in men's (global strength = 6.04) than in women's (global strength = 5.07) network. These results suggest that although the two groups present similarities, such as the central role played by RFQ_U in the connection between BSMAS's items and the CTQ factors clusters, the two networks differ significantly. In particular, in the women's network attachment anxiety shows a connection with attachment avoidance, while in the men's network attachment

avoidance only associates with emotional neglect. Furthermore, the connections between withdrawal related to SNSs use (BSMAS 5) and both physical abuse and RFQ_U are only present in the men's network.

The stability coefficients (CS) were evaluated by relying on a case-dropping subset of non-parametric bootstrapping in both networks. The women's and men's networks showed the same highly satisfactory CS ($CS = 0.75$), while the CS of the strength centrality indices was slightly higher in the women's network ($CS = 0.75$) compared to the men's one ($CS = 0.67$).

Discussion

The current study has the purpose of jointly exploring the mutual relation between PSNSU symptoms, childhood maltreatment, attachment anxiety, attachment avoidance, and failure in RF (i.e., hypomentalization) among emerging adults' men and women. To pursue this aim, a network analysis approach has been applied, which allowed the identification of both common patterns and network-specific between men and women.

The findings of the present study highlighted that within both networks, attachment anxiety has a central position mediating between childhood emotional abuse and the mood modification associated with PSNSU. Interestingly, the negative consequences on life functioning given by PSNSU was the only factor comparable between men and women. Moreover, in both networks, attachment anxiety directly associates with hypomentalization, which, among the different forms of childhood maltreatment, in turn only connects with emotional abuse. Individuals showing high attachment anxiety tend to be hyper-focused on their relational and emotional needs. This might then hinder the development of satisfying RF capacities as others' behavior and related mental

states—which are the subject of much attention among individuals high in attachment anxiety—are interpreted as a function of their internal working models, thus seeking confirmation of their negative self-view and the related fear of rejection (Bartholomew & Horowitz, 1991). Hypomentalization plays a pivotal role in both the men and women networks, resulting particularly relevant for those showing attachment anxiety. Furthermore, the complex interplay between childhood maltreatment, attachment anxiety, and hypomentalization in emerging adults can have a direct influence on their capacity to cope with life stressors (Friend, 2012). Possibly, the presence of childhood maltreatment and the SNSs environment might have jointly fostered such uncertainty about one's and other's mental states (i.e., hypomentalization), in turn increasing SNSs use, in a bidirectional fashion. Therefore, consistent with the compensatory model of problematic Internet use (Kardefelt-Winther, 2014), emerging adults with high attachment anxiety and poorer RF capacities may use SNSs as a maladaptive regulatory strategy in order to mitigate negative affectivity and the perception of the present and past stressful events (Billieux et al., 2015; Boursier et al., 2020). This is especially relevant if one considers that these platforms allow for a cognitively effortless attentional deployment, thus functioning as easily accessible external modalities for emotion regulation (Chirico et al., 2022). Such modalities do not require one to reflect much and could therefore allow for a dampening of the hyperactivating strategies that characterize attachment anxiety.

In terms of gender differences, it is important to note that women showed higher levels of PSNSU as well as higher levels of childhood emotional abuse compared to men, in which the centrality of attachment anxiety among women suggest that their need to seek closeness and reassurance is a pivotal mechanism within their psychosocial functioning, potentially leading to increased PSNSU. However, although attachment avoidance is marginal within both the men and women networks, solely among women it is directly connected with attachment anxiety, further displaying higher levels of both attachments. Attachment anxiety then mediates between attachment avoidance and both hypomentalization and the PSNSU clusters. A slightly different pattern has emerged among men, whereby attachment avoidance and attachment anxiety appeared to be fully independent of each other. Specifically, while among men attachment anxiety shows a comparable associative pattern to women (i.e., it associates with both the PSNSU and childhood maltreatment clusters as well as with hypomentalization), attachment avoidance only connects with emotional neglect. In this regard, attachment avoidance among men seems to be less affected by the level of RF capacities. In fact, emotional neglect regards the *passive* process of lacking to provide the child with the needed emotional care and understanding (Substance Abuse and Mental Health Services Administration, 2022). This is reflected in the deactivating regulation strategies and detached relational modalities typically associated with attachment avoidance, which may prevent misinterpretation of others' behaviors and mental states. As such, attachment avoidance among men seems not to impact their RF capacities and vice-versa.

Overall, these findings are consistent with the literature (Krasnova et al., 2017) and might be given by gender differences in the motivation for SNSs use, whereby women present an increased SNSs use as an attempt to satisfy their needs of belonging related to intimacy and closeness (Mancinelli et al., 2019). SNS-mediated relationships and interactions allow individuals to seek social support yet at one's own pace, with the possibility to easily

withdraw from them or to modulate the timing of the interaction. This is also relevant considering the higher level of hypomentalization observed among women as well as its centrality within the network, as SNSs limit the possibility to gather the necessary feedback to understand others' thoughts and intentions, as well as one's own in relation to others. Moreover, the difference between men and women in the association between the two attachment dimensions and hypomentalization, may be attributed to the type of childhood maltreatment experienced. In particular, in both networks emotional abuse is directly linked with both attachment anxiety and hypomentalization, which highlights the strong role played by emotional abuse in fostering attachment anxiety hyperactivating regulation modalities. Indeed, emotional abuse regards the *active* process of interfering with their child's emotional development, most often based on manipulative-like behaviors from the caregiver (Substance Abuse and Mental Health Services Administration, 2022). This could lead to an increased state of arousal and hypervigilance in interpersonal interactions already during youth, which could ultimately hinder the development of adequate RF capacities (Ahmed et al., 2015).

Based on the above and in line with the theoretical premises of the network analysis approach, the present findings were valuable in highlighting the need for and importance of working on mentalization, which is a key hub useful to support emerging adults' adjustment and reduce at-risk behaviors, such as PSNSU, although acquiring different nuances based on the interaction with attachment and gender identity. Mentalization has become of increasing interest for clinical practice, particularly considering its transdiagnostic role among different adjustment difficulties and mental disorders (Fonagy et al., 2011; Luyten et al., 2020), working as a bridge between past traumas and current life stressors and the subsequent emotional and behavioral reactions. Considering the SNSs filter to social relationships, current evidence hints at the need to work on the capacity of emerging adults to give meaning to their own and others' thoughts, emotions, and actions. In this regard, it is worth noting that mentalization can be described also as a form of explicit metacognition (i.e., thinking about thinking, thus the capacity to recognize and comprehend one's thought process), essential for living adaptively within one's social context (Frith, 2012). Accordingly, the findings of the present study suggest the need to work on these higher-order cognitive competencies during clinical practice in order to promote emerging adults' capacity for self-regulation, thus enabling the adoption of more adaptive emotion regulation strategies, particularly among those high in attachment anxiety.

Limitations and strengths

The present study solely used self-report measures and adopted a cross-sectional design; thus, no causal inferences can be drawn. Nonetheless, in line with the network analysis perspective, findings shed light on some of the mechanisms underlining the association between PSNSU, hypomentalization, childhood maltreatment, and attachment, with significant implications for clinical practice. In particular, the regulatory function that SNSs use can acquire was addressed, particularly among women, as well as the importance of focusing on RF capacities to reduce PSNSU. A further limitation, although having included youth with different occupations, is the highest percentage of students compared to the other occupation categories, which might limit the findings' generalizability to workers or Not in Education, Employment or Training as well as the sole consideration of the gender identity categories of men and

women. Notwithstanding, a strength of the present study is the balance, in terms of sample size and sample sociodemographic characteristics, between these two groups. As last, the brevity of the tool used to evaluate RF could represent an additional limitation of the study, although it ought to be pointed out that a such measure is widely used internationally, in both research and clinical settings, and holds a strong theoretical grounding (Gagliardini & Colli, 2019), which use ultimately favors a more homogenous and sounding information exchange among scholars.

Conclusions

The findings of the present study shed light on the centrality of hypomentalization in the association between childhood emotional abuse, attachment anxiety, and mood modification symptoms of PSNSU among both men and women. Notwithstanding the presence of these variables among both genders, they showed a greater impact on women. These results altogether suggest that SNSs use might function as a maladaptive regulatory strategy in order to mitigate the negative affectivity associated with childhood maltreatment, and in particular related to emotional abuse. Therefore, RF and the associated metacognitive capacities should be of great focus during clinical practice in order to prevent and reduce at-risk behaviors, such as PSNSU, among emerging adults. Nonetheless, differences in the motivation for SNSs use between men and women and the role of RF should be addressed as a function of their attachment pattern. This is particularly relevant considering the importance of SNSs for emerging adults' social life and interpersonal functioning related to their capacity to achieve their developmental potential.

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