Attatched to Virtual Dreams

The Mediating Role of Maladaptive Daydreaming in the Relationship Between Attachment Styles and Problematic Social Media Use

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Abstract: Maladaptive daydreaming describes excessive fantasy activity that interferes with an individual's life. Surprisingly, the precursors of maladaptive daydreaming and its role in excessive involvement in virtual worlds have been scarcely investigated. In the current study, we examined the relationships among attachment styles, maladaptive daydreaming, and problematic social media use (PSMU) in a sample of community-dwelling adults. Eight hundred seventy-seven participants between 18 and 68 years old were recruited via an online survey and asked to fill out self-reported measures on attachment styles, maladaptive daydreaming, and PSMU. Mediation analyses showed that maladaptive daydreaming is a significant mediator in the relationships between preoccupied and fearful attachment styles and PSMU, suggesting that maladaptive daydreaming partly explains the established link between insecure attachment styles and excessive use of social media. Individuals with PSMU fostered by maladaptive daydreaming may benefit from clinical interventions that promote the use of adaptive regulatory strategies to develop feelings of security and self-confidence that may serve to reduce the excessive involvement in social media.

Key Words: Problematic social media use, attachment, maladaptive daydreaming, mediation model

Social network sites (SNSs) are online platforms that allow people to interact with each other and share personal data. Today, it is easy to access SNSs and quickly receive notifications about one's own and others' digital profiles through applications for computers, smartphones, and tablets. As of July 2020, there were 3.96 billion SNS users, 3.91 billion of them using social media functions through mobile devices (Clement, 2020). Research has shown that SNS use is related to individual well-being (Bian et al., 2018), as it is associated with increased levels of feelings of social connectedness (Grieve et al., 2013), life satisfaction (Kim and Shen, 2020; Oh et al., 2014), and informational and emotional support (Liu et al., 2018). However, excessive engagement in SNSs has also been linked to impairments in psychological and interpersonal functioning (Dhir et al., 2018; Ruggieri et al., 2020; Van den Eijnden et al., 2018; Wong et al., 2020).

In fact, the addictive tendency toward some internet activities has been widely recognized, and it has been suggested that excessive use of SNSs can be viewed as a genuine addictive behavior (Andreassen, 2015; Kuss and Griffiths, 2011). However, some scholars have stressed that excessive involvement in internet activities might be better conceptualized as a compensatory strategy to cope with individual difficulties and distress (Kardefelt-Winther, 2014; Kardefelt-Winther et al., 2017). Notably, it has been observed that beyond the potentially addictive features of internet applications, several developmental and psychological factors are linked to the onset of problematic internet use, such as traumatic experiences (Kircaburun et al., 2020a; Schimmenti et al., 2017), maladaptive personality traits (Di Blasi et al., 2020; Gervasi et al., 2017a, 2017b; Kircaburun and Griffiths, 2018; Kircaburun et al., 2018, 2020b; Musetti et al., 2019), emotion regulation difficulties (Di Blasi et al., 2019; Estevez et al., 2017; Liu and Ma, 2019a; Magunco et al., 2019), and dissociative processes (Guglielmucci et al., 2019).

In this context, it is noteworthy that clinical reports and research findings have highlighted that the interpersonal difficulties engendered in early attachment experiences are relevant for understanding many forms of problematic internet use (Schimmenti and Caretti, 2010, 2017; Schimmenti et al., 2012, 2014, 2019a; Wéry et al., 2019). Attachment is an inborn motivational system that leads individuals to establish and maintain close relationships during their life span (Bifulco and Thomas, 2012). Early experiences in attachment relationships have a relevant influence on the individual's cognitive and affective development by shaping the representations of the self, others, and the relationship between oneself and others (Bowlby, 1973).

According to Bartholomew and Horowitz (1991), four adult attachment styles may be distinguished, depending on the representations of self and others: a) secure attachment is characterized by a positive view of both the self and others, b) dismissing attachment is characterized by a positive view of the self and a negative view of others, c) preoccupied attachment is characterized by a negative view of the self and a positive view of others, and d) fearful attachment is characterized by a negative view of both the self and others. Moreover, attachment styles reflect the individual tendency to display anxiety (high levels of preoccupied and fearful domains compared with secure and dismissing counterparts) and/or avoidance (high levels of dismissing and fearful domains compared with secure and preoccupied attitudes) in close relationships. Individuals with a negative view of the self embedded in their attachment system might be more susceptible to using internet activities defensively to excessively exclude from their consciousness the painful feelings concerning difficulties experienced in close relationships (Schimmenti and Caretti, 2017).

Research has shown that a negative representation of the self and excessive worries about social relationships have a crucial role in a specific domain of problematic internet use, that is, problematic social media use (PSMU). A recent meta-analysis has found that females tend to experience higher degrees of PSMU than males (Su et al., 2020), and it has been shown that younger age and lower education are associated with PSMU (Andreassen et al., 2017). Adding to sociodemographic factors, various psychological and psychopathological constructs have been linked to PSMU. Low levels of self-esteem (Andreassen et al., 2017), feelings of shame (Casale and Fioravanti, 2017), the fear of missing out (Blackwell et al., 2017; Casale et al., 2018; Chai et al., 2019; Dhir et al., 2018; Oberst et al., 2017; Sheldon et al., 2020), and social anxiety (Dempsey et al., 2019) are all related to the severity of PSMU. However, although some literature exists suggesting that
insecure attachment styles may foster PSMU (D’Arienzo et al., 2019), their specific effects on the development and maintenance of PSMU have been scarcely examined to date (Demircioğlu and Köse, 2020, 2021). The limited available literature suggests that secure attachment attitudes are linked with lower levels of PSMU (Monacis et al., 2017) and that the relationship between insecure attachment styles characterized by a negative view of the self (preoccupied and fearful) and PSMU is partially mediated by self-esteem (Demircioğlu and Köse, 2020).

In addition, researchers have recently shown interest in maladaptive daydreaming (MD), a clinical construct that describes excessive involvement in fantasy activities (Somer, 2002). Clinical features associated with MD comprise impairments in personal and interpersonal functioning due to excessive use of the imagination; behaviors such as vocalization, repetitive movements, and music listening to foster immersion in daydreams; and yearning for fantasy activities (Schimmenti et al., 2019b; Somer et al., 2016a, 2017). Empirical findings show that MD is negatively correlated with secure attachment style and positively correlated with preoccupied and fearful attachment styles, feelings of shame, and dissociative symptoms in community-dwelling adults and self-identified maladaptive daydreamers (Schimmenti et al., 2020). In this respect, it has been suggested that MD may be conceptualized as a process of defensive absorption to cope with feelings of shame related to emotional failures in childhood attachment relationships (Ferrante et al., 2020).

Accordingly, MD could have a relevant role in the onset and maintenance of PSMU. In fact, feelings of unworthiness and shame embedded in anxious attachment styles might lead individuals to escape into fantasies in which they can positively represent themselves; in turn, these fantasies might foster the use of SNSs, where individuals can exhibit a public identity based on an idealized representation of the self (Casale and Fioravanti, 2015). Thus, it is possible that the activities performed on SNSs promote positive feelings of acceptance, relaxation, and/or relief among anxiously attached individuals who display MD. This hypothesis is consistent with previous research showing that escapism-related motives are associated with a maladaptive use of online activities (Deleuze et al., 2019; Hagström and Kaldo, 2014), including PSMU (Kircaburun and Griffiths, 2019). Furthermore, it has been observed that books, television, internet content, or other mediatic stimuli may trigger immersion in daydreaming (Bigelsen and Shupack, 2011; Pietkiewicz et al., 2018). Accordingly, SNSs might trigger compensatory fantasies and might thus coincide with the onset of PSMU.

Therefore, we hypothesized that MD may constitute a dysfunctional process contributing to the relationship between anxious attachment styles and PSMU. Despite having been suggested that MD may be understood as a distinct clinical syndrome (Soifer-Dudek et al., 2021; Somer et al., 2016a) having its roots in the experience of vivid fantasies from childhood (Somer et al., 2016b), research has shown that MD might also constitute a maladaptive coping strategy to avoid unpleasant feelings and painful memories related to attachment experiences (Ferrante et al., 2020). Consistent with this view, MD has been linked with feelings of shame and anxious attachment styles (Schimmenti et al., 2020). In this context, it is noteworthy that preoccupied and fearful attachment styles could have different effects on the development of MD and PSMU. In fact, individuals with preoccupied attachment, who positively perceive the others, could have a higher risk to engage in PSMU to satisfy their needs of relatedness (Chen, 2019), whereas fearful-attached individuals, who negatively perceive both themselves and other people, could show a higher risk to adopt lonely activities, such as MD, to avoid the rejection from others.

In the current study, we aimed to investigate the relationship among attachment styles, MD, and PSMU in a group of community-dwelling adults. The study was theoretically anchored in a process-based approach in which disruption or dysfunction in psychological processes is hypothesized as the final common pathway in the development of a mental disorder (Kinderman, 2005). According to this approach, specific psychological processes mediate the relationship between biopsychosocial risk factors and symptoms of mental disorders (Kinderman et al., 2013), and these factors should be the major target of psychological interventions (see Billieux et al., 2015, for an example in the context of problematic mobile phone use).

Therefore, the purpose of this study was to examine whether MD mediated the relationships between attachment styles characterized by a negative view of the self (the risk factor) and PSMU (the symptom). In fact, examining the role of MD as a potential process linked to anxious attachment and fostering PSMU might serve to determine if MD is susceptible to constitute a treatment target in people displaying excessive involvement in SNSs. In this vein, we also explored if a secure attachment style constitute a protective factor toward the onset of problematic daydreaming and PSMU. Eventually, because previous research suggested that some sociodemographic characteristics are related to PSMU, we also examined how sociodemographic variables affected the relationship among attachment styles, MD levels, and PSMU in our sample.

METHODS

Participants and Procedures

The study sample consisted of 877 community-dwelling individuals (n = 522 females, 59.5%). Participants were between 18 and 68 years old (mean, 30.08; SD, 11.02), and the average number of years of education was 14.87 (SD, 2.25). One hundred eighty (20.5%) participants declared that they were married. No significant sex differences were found for age (t1887 = 1.83; p = 0.07; d = 0.13), years of education (t987 = −0.89; p = 0.37; d = 0.06), and marital status (χ21 = 0.001; p = 0.98).

We published advertisements linked to an anonymous online survey on SNSs (e.g., Facebook) to recruit the participants. People who electronically provided consent to participate in the study were automatically administered a sociodemographic schedule and various self-report instruments, including measures that aimed to assess attachment styles, MD, and PSMU. All questions were mandatory, and there were no missing data. The present study is part of a wide research project, and the data set will likely be used for further studies. However, no data from this project have been previously published. The Internal Review Board for Psychological Research of the Køre University of Enna (UKE) provided the ethical clearance for research project. The study was conducted according to the Ethical Code of the Italian Association of Psychology and the American Psychological Association. All procedures carried out in this study followed the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

Measures

The Bergen Social Media Addiction Scale (BSMAS; Andreassen et al., 2012, 2016; Italian translation by Monacis et al., 2017) is a self-report measure that assesses the symptoms of social media addiction. The BSMAS comprises six items ranked on a 5-point Likert scale (1 = “very rarely” to 5 = “very often”). The total score was obtained by summing these items. An example of an item is, “How often during the last year have you felt an urge to use social media more and more?” The BSMAS has been translated into different languages and shows good psychometric properties (Bányai et al., 2017; Leung et al., 2020; Lin et al., 2017; Monacis et al., 2017). In this study, Cronbach’s α of the measure was .79.

The Relationship Questionnaire (Bartholomew and Horowitz, 1991; Italian translation by Carli, 1995) is a self-report measure that assesses prototypical adult attachment styles, such as secure, dismissing, preoccupied, and fearful. Each attachment style is evaluated through a first-person statement. Participants were asked to rate how much each
statement reflected their attitudes toward close relationships on a 7-point Likert scale (1 = "strongly disagree" to 7 = "strongly agree"). The following statement is an example: "I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others do not value me as much as I value them" (refers to preoccupied attachment style). The Relationship Questionnaire has shown good psychometrics properties, such as test-retest reliability and discriminant validity (Griffin and Bartholomew, 1994; Sharfe and Bartholomew, 1994). The Italian version of the instrument has been already used in research to investigate attachment styles in problematic internet use (Schimmenti and Caretti, 2017) and MD (Schimmenti et al., 2020).

The Maladaptive Daydreaming Scale-16 (MDS-16; Somer et al., 2016c, 2017; Italian translation by Schimmenti et al., 2020) is a self-report measure that assesses MD. The MDS-16 is composed of 16 items rated on an 11-point Likert scale that reflects intervals of 10% (0% = "never/none of the time" to 100% = "extreme amounts/all of the time"). An example of an item is, “Some people have the experience of their daydreaming hindering the things that are most important to them. How much do you feel that your daydreaming activities interfere with achieving your overall life goals?” The total score was obtained by averaging the scores of all items. The instrument, including the Italian version, has demonstrated good internal reliability (Schimmenti et al., 2020; Somer et al., 2016c) and configural invariance across different cultures (Soffer-Dudek et al., 2021). In this study, the Cronbach’s $\alpha$ of the MDS-16 was .91.

A sociodemographic schedule was also used to collect information on sex, age, years of education, marital status, and hours spent on social media.

**Data Analysis**

Descriptive statistics were computed for all investigated variables. Sex differences were analyzed with a t-test, and effect sizes for sex differences were calculated via Cohen’s $d$ values. The associations among age, years of education, time spent on social media, attachment styles, MD, and PSMU were examined by estimating Pearson’s $r$ coefficients. A multiple linear regression analysis was performed to test whether attachment styles and MD were predictors of PSMU, taking into account the effects of sociodemographic variables (sex, age, years of education, and marital status) and the time spent on social media. Mediation analyses were computed to examine the mediating effects of MD on the relationships between attachment styles and PSMU. Thus, we computed four mediation models, entering each attachment style as predictor, MD as mediator, PSMU as dependent variable, and sociodemographic variables and time spent on social media as covariates. Mediation analyses were performed by using Model 4 of the Process macro for SPSS. The significance of the models was tested by computing 5000 bias-corrected bootstrap samples and setting a $p$ value of 0.5 as the criterion: the effect is statistically significant if 0 is not included in the 95% confidence interval (CI) (Hayes, 2013).

**RESULTS**

Descriptive statistics and sex differences are displayed in Table 1. The t-test showed that females spent more time on social media and reported higher scores on preoccupied and fearful attachment and PSMU than males did. No sex differences were found for secure attachment, dismissing attachment, and MDS-16 scores. According to Cohen’s guidelines for interpreting $d$ values (Cohen, 1988), small effect sizes were observed for sex differences on fearful attachment and PSMU. Pearson’s $r$ coefficients are reported in Table 2. Significant correlations were observed. Age and years of education were positively associated with secure attachment and negatively associated with time spent on social media, insecure attachment styles, MD, and PSMU. Positive associations were found among the time spent on social media, preoccupied and fearful attachment, MD, and PSMU. In addition, secure attachment style negatively correlated with time spent on social media, MD, and PSMU, whereas dismissing attachment style positively correlated with MD.

The results of multiple linear regression analysis are shown in Table 3. The scores on the BSMAS were predicted by preoccupied attachment style and MDS-16 scores. Female sex, younger age, not being married, and more hours spent on social media were also predictors of higher scores on BSMAS.

Mediation analyses showed that MD partially mediated the effect of preoccupied attachment on PSMU and fully mediated the relationship between fearful attachment style and PSMU (Figs. 1, 2), suggesting that MD is a psychological process that might contribute to PSMU in individuals with a negative view of the self. Moreover, female sex, younger age, not being married, and a greater amount of time spent on social media increased the levels of PSMU in both mediation models. Mediation analyses also showed that MD mediated neither the relationship between secure attachment and PSMU nor the relationship between dismissing attachment and PSMU. In fact, despite MD being a predictor of PSMU in a mediation model including secure attachment ($B = 0.106; \ SE, 0.008; p < 0.001$) and dismissing attachment ($B = 0.091; 95\% CI, 0.074–0.107; SE, 0.008; p < 0.001$), dismissing attachment had no significant effects on either MD ($B = 0.259; 95\% CI, -0.235 to 0.753; SE, 0.252; p = 0.304$) or PSMU ($B = -0.062; 95\% CI, -0.182 to 0.059; SE, 0.061; p = 0.315$). In addition, secure attachment predicted MD ($B = -1.084; 95\% CI, -1.592 to -0.576; SE, 0.259; p < 0.001$), but direct ($B = -0.034; 95\% CI, -0.160 to 0.093; SE, 0.064; p = 0.600$) and

**TABLE 1. Descriptive Statistics and Sex Differences**

<table>
<thead>
<tr>
<th></th>
<th>Full Sample (N = 877)</th>
<th>Males (n = 355)</th>
<th>Females (n = 522)</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
</tr>
<tr>
<td>Age</td>
<td>29.72</td>
<td>10.78</td>
<td>18–68</td>
</tr>
<tr>
<td>Years of education</td>
<td>14.73</td>
<td>2.51</td>
<td>8–21</td>
</tr>
<tr>
<td>Hours spent on social media</td>
<td>3.32</td>
<td>2.27</td>
<td>0–18</td>
</tr>
<tr>
<td>Secure attachment</td>
<td>3.94</td>
<td>2.16</td>
<td>1–7</td>
</tr>
<tr>
<td>Dismissing attachment</td>
<td>4.23</td>
<td>2.21</td>
<td>1–7</td>
</tr>
<tr>
<td>Preoccupied attachment</td>
<td>2.44</td>
<td>1.79</td>
<td>1–7</td>
</tr>
<tr>
<td>Fearful attachment</td>
<td>2.78</td>
<td>2.09</td>
<td>1–7</td>
</tr>
<tr>
<td>MDS-16 total score</td>
<td>24.34</td>
<td>16.65</td>
<td>0–86.88</td>
</tr>
<tr>
<td>BSMAS total score</td>
<td>12.62</td>
<td>4.76</td>
<td>6–27</td>
</tr>
</tbody>
</table>

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Correlational findings are thus consistent with the hypothesis that the negative view of the self embedded in anxious attachment styles is associated with excessive use of SNSs. Such link might be explained by a desire to receive favorable feedback or a need to protect from perceived rejection by others (Hart et al., 2015; Oldmeadow et al., 2013). Therefore, our findings are in line with the hypothesis that SNS use may constitute a compensatory strategy that allows individuals with insecure attachment styles to satisfy their unmet relational needs (Karderfelt-Winther, 2014). Furthermore, secure attachment was associated with lower levels of MD, whereas dismissing, preoccupied, and fearful attachment styles were associated with higher levels of MD. The positive associations between preoccupied and fearful attachment and MD are consistent with previous research suggesting that excessive daydreaming may be used as an unconscious regulatory strategy to deal with unpleasant feelings of shame (Ferrante et al., 2020) and social anxiety (Somer and Herscu, 2017). In fact, the fantasies involved in MD may be focused on an idealized self that can receive admiration from others (Biggelen and Schupak, 2011). The low but significant and positive association between dismissing attachment and MD scores could reflect the tendency of dismissing individuals to display an inflated self-reliance and to avoid intimacy (Bartholomew and Horowitz, 1991) to defensively exclude their own attachment needs (Bowby, 1988). Thus, MD could in some cases constitute part of the cognitive processes that foster the positive view of the self in individuals with an avoidant attachment style. All of these considerations could also provide a useful theoretical framework to account for the negative association between secure attachment and MD, suggesting that the tendency to perceive oneself as lovable and to feel comfortable in close relationships that characterize individuals with secure attachment (Bartholomew and Horowitz, 1991) may constitute a protective factor toward MD (Schimmenti et al., 2020).

Multiple linear regression analysis showed that preoccupied attachment and MD were predictors of PSMU. However, mediation analyses provided further insights on the relationships between attachment styles, MD, and PSMU, showing that MD partially mediated the relationship between preoccupied attachment and PSMU and fully mediated the effects of fearful attachment on PSMU. These findings highlight the relevant role played by excessive daydreaming activities in PSMU for individuals who display a negative view of the self embedded in their attachment styles. It is noteworthy that MD activities involve absorption processes that foster engagement in fantasies (Somer, 2018; Somer et al., 2017), diverting attention from other inner and external stimuli (Soffer-Dudek et al., 2015). Thus, the MD activities could, on the one hand, exclude awareness of the painful feelings related to an idealized image of oneself. From this perspective, preoccupied and fearful individuals could resort to absorption in fantasies as a “psychic retreat” (Steiner, 1993) from the distress experienced in close relationships. In turn, high engagement

### TABLE 2. Pearson R Correlations Among the Investigated Variables

<table>
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<th>5</th>
<th>6</th>
<th>7</th>
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<th>9</th>
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<tr>
<td>Age</td>
<td>0.15**</td>
<td>−0.21**</td>
<td>0.16**</td>
<td>−0.16**</td>
<td>−0.11**</td>
<td>−0.16**</td>
<td>−0.23**</td>
<td>−0.35**</td>
</tr>
<tr>
<td>Years of education</td>
<td></td>
<td>−14**</td>
<td>0.13**</td>
<td>−0.10**</td>
<td>−0.09**</td>
<td>0.16**</td>
<td>−0.13**</td>
<td>−0.13**</td>
</tr>
<tr>
<td>Hours spent on social media</td>
<td></td>
<td></td>
<td></td>
<td>−0.14**</td>
<td></td>
<td>−0.04</td>
<td>0.14**</td>
<td>0.11**</td>
</tr>
<tr>
<td>Secure attachment</td>
<td></td>
<td></td>
<td></td>
<td>−0.38**</td>
<td>−0.23**</td>
<td>−0.32**</td>
<td>−0.19**</td>
<td>−0.16**</td>
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<tr>
<td>Dismissing attachment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.05</td>
<td></td>
<td>0.07*</td>
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<tr>
<td>Preoccupied attachment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.46**</td>
<td></td>
<td>0.34**</td>
</tr>
<tr>
<td>Fearful attachment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.34**</td>
<td>0.24**</td>
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<tr>
<td>MDS-16 total score</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>0.42**</td>
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<tr>
<td>BSMAS total score</td>
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*p < 0.05.
**p < 0.01.

### TABLE 3. Linear Regression Model Predicting BSMAS Total Score

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
<th>Partial r</th>
<th>t</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Sex</td>
<td>0.63</td>
<td>0.27</td>
<td>0.08</td>
<td>2.29</td>
<td>0.02</td>
</tr>
<tr>
<td>Age</td>
<td>−0.07</td>
<td>0.02</td>
<td>−0.12</td>
<td>−3.49</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Marital status</td>
<td>−1.08</td>
<td>0.49</td>
<td>−0.07</td>
<td>−2.20</td>
<td>0.03</td>
</tr>
<tr>
<td>Years of education</td>
<td>−0.04</td>
<td>0.06</td>
<td>−0.02</td>
<td>−0.67</td>
<td>0.50</td>
</tr>
<tr>
<td>Hours spent on social media</td>
<td>0.56</td>
<td>0.06</td>
<td>0.30</td>
<td>9.12</td>
<td>&lt;0.01</td>
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<tr>
<td>Secure attachment</td>
<td>−0.01</td>
<td>0.07</td>
<td>0.00</td>
<td>−0.08</td>
<td>0.94</td>
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<tr>
<td>Dismissing attachment</td>
<td>−0.04</td>
<td>0.07</td>
<td>−0.02</td>
<td>−0.58</td>
<td>0.56</td>
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<tr>
<td>Preoccupied attachment</td>
<td>0.23</td>
<td>0.09</td>
<td>0.09</td>
<td>2.69</td>
<td>0.01</td>
</tr>
<tr>
<td>Fearful attachment</td>
<td>0.06</td>
<td>0.08</td>
<td>0.03</td>
<td>0.76</td>
<td>0.45</td>
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<tr>
<td>MDS-16 total score</td>
<td>0.08</td>
<td>0.01</td>
<td>0.30</td>
<td>9.08</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Model: F(10.866) = 44.02, p < 0.001; R² = 0.34.

Correlation analysis showed that younger age, lower education, and increased time spent online were associated with PSMU symptoms. Several studies have reported similar findings in the fields of problematic internet use (Gervasi et al., 2017a; Magaumo et al., 2019; Schimmenti et al., 2014) and PSMU (Andreasen et al., 2017; van Rooij et al., 2017). Moreover, secure attachment scores were associated with lower levels of PSMU symptoms, whereas preoccupied and fearful attachment scores were associated with higher levels of PSMU. In line with previous research, these findings suggest that secure attachment might represent a protective factor for PSMU (Demircioğlu and Köse, 2020) and that anxious attitudes toward close relationships might foster maladaptive use of social media (Liu and Ma, 2019a; Worsley et al., 2017).

### DISCUSSION

In this study, we explored whether MD constitutes a psychological process that mediates the relationships between adult attachment styles and PSMU. Significant sex differences were observed in our sample. In line with previous research, females reported higher levels of fearful attachment (Schimmenti, 2016) and more PSMU symptoms than males did (Andreasen et al., 2012, 2017; Kircaburun et al., 2019; Su et al., 2020).

Correlation analysis showed that younger age, lower education, and increased time spent online were associated with PSMU symptoms. Several studies have reported similar findings in the fields of problematic internet use (Gervasi et al., 2017a; Magaumo et al., 2019; Schimmenti et al., 2014) and PSMU (Andreasen et al., 2017; van Rooij et al., 2017). Moreover, secure attachment scores were associated with lower levels of PSMU symptoms, whereas preoccupied and fearful attachment scores were associated with higher levels of PSMU. In line with previous research, these findings suggest that secure attachment might represent a protective factor for PSMU (Demircioğlu and Köse, 2020) and that anxious attitudes toward close relationships might foster maladaptive use of social media (Liu and Ma, 2019a; Worsley et al., 2017).

Correlational findings are thus consistent with the hypothesis that the negative view of the self embedded in anxious attachment styles is associated with excessive use of SNSs. Such link might be explained by a desire to receive favorable feedback or a need to protect from perceived rejection by others (Hart et al., 2015; Oldmeadow et al., 2013). Therefore, our findings are in line with the hypothesis that SNS use may constitute a compensatory strategy that allows individuals with insecure attachment styles to satisfy their unmet relational needs (Karderfelt-Winther, 2014). Furthermore, secure attachment was associated with lower levels of MD, whereas dismissing, preoccupied, and fearful attachment styles were associated with higher levels of MD. The positive associations between preoccupied and fearful attachment and MD are consistent with previous research suggesting that excessive daydreaming may be used as an unconscious regulatory strategy to deal with unpleasant feelings of shame (Ferrante et al., 2020) and social anxiety (Somer and Herscu, 2017). In fact, the fantasies involved in MD may be focused on an idealized self that can receive admiration from others (Biggelen and Schupak, 2011). The low but significant and positive association between dismissing attachment and MD scores could reflect the tendency of dismissing individuals to display an inflated self-reliance and to avoid intimacy (Bartholomew and Horowitz, 1991) to defensively exclude their own attachment needs (Bowby, 1988). Thus, MD could in some cases constitute part of the cognitive processes that foster the positive view of the self in individuals with an avoidant attachment style. All of these considerations could also provide a useful theoretical framework to account for the negative association between secure attachment and MD, suggesting that the tendency to perceive oneself as lovable and to feel comfortable in close relationships that characterize individuals with secure attachment (Bartholomew and Horowitz, 1991) may constitute a protective factor toward MD (Schimmenti et al., 2020).
In fantasies could promote the use of SNSs as an environment where the idealized self-representation could be exposed as the real identity and could reduce worries about relationships (Bodroža and Jovanović, 2016). In this context, a fascinating hypothesis is that the different representations of others involved in preoccupied and fearful attachment might engender different patterns of PSMU, that is, different types of problematic and excessive behaviors in social media usage patterns. It is indeed possible to hypothesize that individuals with a preoccupied attachment style, who display a negative view of the self but a positive view of others, could use SNSs to establish and maintain intimate relationships with others (Chen, 2019) and could exhibit an idealized identity embedded in MD activities as a strategy to feel more acceptable and self-confident in online virtual interactions (Rosenberg and Hegbert, 2011). In contrast, the negative representation of the self and the negative expectations toward others that characterize the fearful attachment style may lead individuals to interact on SNSs to fulfill their ambivalent needs of approval and avoidance of intimacy (Fioravanti et al., 2020). Accordingly, the exposure of a better image of themselves sustained by MD activities might help these individuals to cope with their low self-esteem and, at the same time, to increase their perceived control of the social interactions by reducing feelings of inadequacy related to them. However, these psychological patterns might be maladaptive in the long run and might foster further problems. In fact, excessive worries about one's own identity could increase engagement in MD, increasing PSMU in a vicious cycle.

Mediation analyses also showed that the secure attachment style was a negative predictor of MD, but its effects on PSMU were not significant; in contrast, higher levels of PSMU were predicted by higher levels of MD. This finding suggests that MD has a more important role in PSMU than secure attachment and that other risk factors might foster the effect of MD in PSMU. Moreover, the dismissing attachment style did not predict MD or PSMU in the mediation model. This result may be explained in light of the avoidant attitudes and the sense of independence involved in the dismissing attachment style (Bartholomew and Horowitz, 1991). Although individuals with dismissing attachment could resort to fantasies to maintain a positive view of the self, other psychological processes could be more relevant for fostering their self-esteem. In fact, the inflated self-reliance shown by individuals with dismissing attachment could lead them to avoid interaction on SNSs, even though they could use SNSs to assert a positive view of themselves.

Finally, it is noteworthy that the levels of PSMU in our mediation models were significantly influenced by covariates such as female sex, younger age, not being married, and a greater amount of time spent on SNSs, suggesting that several risk factors are involved in the development and maintenance of PSMU. It has been suggested that females are more prone to developing addictive behaviors toward social media use than males are (Andreassen et al., 2012). Notably, research has shown that females especially use social media to maintain their bonds with others (Krasnova et al., 2017) and that the fear of receiving negative judgments may lead young adult females to problematic use of online communication services (Casale et al., 2014). Previous research has also shown that the lack of support in offline interactions may increase problematic internet use (Mazzoni et al., 2016; Wang and Wang, 2013), which might explain the positive association between PSMU and not being married. Finally, several studies have found that time spent online may increase the risk of developing problematic internet use (Gervasi et al., 2017a; Maganuco et al., 2019; Schimmenti et al., 2019a). Online services may provide different opportunities to cope with distress, and the amount of time spent online may be related to the degree of urgency in using internet activities as a compensatory strategy (Karedefelt-Winther, 2014).

The findings of this study left unanswered some questions that future research should address. We found that MD partially mediated the relationship between preoccupied attachment and PSMU, which suggests that other psychological factors could be involved in this relationship. It has been shown that the online social support is a mediator in the relationship between anxious attachment attitudes and PSMU.
obtain social support. Moreover, fearful attachment individuals could be more prone to resort to SNSs to obtain social support.

Furthermore, we found a stronger correlation between MD and PSMU than between attachment styles and PSMU. Thus, preoccupied and fearful attachment could not represent the sole risk factors involved in the relationship between MD and PSMU. Among the psychological factors that are potentially involved in the relationship between MD and PSMU, childhood emotional trauma and difficulties in emotion regulation are tenable candidate factors, as they are involved in the development of both MD (Ferrante et al., 2020; Greene et al., 2020) and PSMU (Kircaburun et al., 2020a; Liu and Ma, 2019a). In fact, abuse and neglect in early attachment relationships may impair the development of emotion regulation abilities (Schimmenti and Caretti, 2016), thus increasing the risk to resort on online maladaptive fantasies and dysfunctional coping strategies (Schimmenti and Caretti, 2017). In addition, research has shown that vulnerable narcissistic traits are associated with PSMU (Casadei and Bianchi, 2020). It is noteworthy that vulnerable narcissistic individuals could excessively engage in daydreaming to perceive themselves as grandiose (Schimmenti et al., 2020), and they could use SNSs to present themselves in accordance with their fantasies. Future research is needed to disentangle the potential role of childhood trauma, emotion regulation difficulties, and vulnerable narcissism in the relationship between MD and PSMU.

Our findings should be considered in light of some other limitations. First, we recruited volunteers from the community, thus limiting the generalizability of the results. Second, attachment styles, MD, and PSMU were evaluated through self-report measures, which could engender bias in the results, even though these measures have been widely used in research and have shown adequate psychometric properties. Third, the cross-sectional nature of the study does not provide unambiguous evidence about the causal relationships among variables. Further research is thus needed. Future studies might recruit individuals who have clinical impairments due to PSMU and might use more reliable instruments, such as structured interviews, to improve assessment of the variables of interest. Longitudinal studies could be useful for understanding how a negative view of the self embedded in the attachment system may lead to the development of MD and PSMU. Moreover, we did not investigate the preference toward a specific SNS usage. Today, several SNSs provide different online services that could be used for different purposes, some of them being more frequently associated with problematic usage patterns (Rothen et al., 2018). Future research might thus extend the findings of this study by also examining the main activities on different SNSs. Finally, we did not examine how the different imagined scenarios of MD could be involved in SNS use. A qualitative approach is thus warranted to examine which fantasies in MD are involved in PSMU.

CONCLUSIONS

Its limitations notwithstanding, our study provides empirical evidence about the potential role of MD in the relationship between attachment styles and PSMU. Our findings suggest that individuals with a negative view of the self embedded in their attachment system are more prone to seek restoring and comforting fantasies, incurring a higher risk of developing PSMU. In particular, insecure attached individuals could present themselves in the virtual environment by displaying a fantasized and idealized identity to fulfill their need for acceptance by others. However, preoccupied and fearful attachment might engender different patterns of PSMU: individuals with a preoccupied attachment style could use SNSs to feel closer to others (Chen, 2019), whereas those with a fearful attachment style could use SNSs to manage fears of rejection and intimacy when presenting themselves (Lyvers et al., 2016).

The findings of this study might have relevant implications for the assessment and treatment of PSMU. In fact, it is advisable that clinicians carefully evaluate the effects of the unpleasant feelings related to the negative view of the self, as well as the effects of excessive fantasies on SNS activities to understand the psychological processes involved in the development and maintenance of PSMU. From a process-based approach, clinical interventions should primarily be aimed at reducing MD and facilitating the development of more adaptive self-regulatory strategies, so as to decrease excessive engagement in SNSs. Clinicians might help patients become aware of the negative outcomes of MD and help them adopt alternative and adaptive strategies to cope with the distress experienced in close relationships (Somer, 2018). Notably, improvement in self-regulation abilities could allow patients to process the painful discrepancies between representations of an idealized self and realistic representations of the self. From this perspective, the clinical setting should be characterized by a secure relationship in which patients can explore their interpersonal difficulties without fear of the clinician's negative judgment (Bowby, 1988). The clinician's attunement with painful feelings of unworthiness and a supportive attitude toward patients' attempts to disclose their insecurity in close relationships might improve patients' self-confidence and feeling of self-acceptance (Kohut, 1977; Lichtenberg et al., 1996, 2011). As a result, these interventions might help patients reduce the distress engendered by close relationships, decreasing the need to resort to MD and excessive SNS use to cope with insecure self-representations.

DISCLOSURE

Ethical clearance was obtained from the Internal Review Board for Psychological Research of the Kore University of Enna (UKE). The study was carried out according to the Ethical Code of the Italian Association of Psychology and the American Psychological Association. All procedures followed in this study were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants for being included in the study. The authors declare no conflict of interest.

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