Social networking addiction, attachment style, and validation of the Italian version of the Bergen Social Media Addiction Scale

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Aim: Research into social networking addiction has greatly increased over the last decade. However, the number of validated instruments assessing addiction to social networking sites (SNSs) remains few, and none have been validated in the Italian language. Consequently, this study tested the psychometric properties of the Italian version of the Bergen Social Media Addiction Scale (BSMAS), as well as providing empirical data concerning the relationship between attachment styles and SNS addiction. *Methods:* A total of 769 participants were recruited to this study. Confirmatory factor analysis (CFA) and multigroup analyses were applied to assess construct validity of the Italian version of the BSMAS. Reliability analyses comprised the average variance extracted, the standard error of measurement, and the factor determinacy coefficient. *Results:* Indices obtained from the CFA showed the Italian version of the BSMAS to have an excellent fit of the model to the data, thus confirming the single-factor structure of the instrument. Measurement invariance was established at configural, metric, and strict invariances across age groups, and at configural and metric levels across gender groups. Internal consistency was supported by several indicators. In addition, the theoretical associations between SNS addiction and attachment styles were generally supported. *Conclusion:* This study provides evidence that the Italian version of the BSMAS is a psychometrically robust tool that can be used in future Italian research into social networking addiction.

Keywords: behavioral addictions, social networking addiction, psychometric validation, attachment style

INTRODUCTION

Over the last decade, social media use has become increasingly prevalent in daily activities. However, when people spend significant amounts of time online, Internet-related activities can lose their functional properties leading to negative outcomes including problematic and addictive behaviors (Griffiths, 2000; LaRose, Kim, & Peng, 2010). Among the various lines of research examining online addictive behaviors, a more recent concern has focused on addiction to social networking sites (SNSs).

SNSs are virtual communities where users can create individual public profiles, interact with real-life friends, and meet other people with similar interests to maintain both online and offline relationships (Griffiths, 2012; Kuss & Griffiths, 2011a, 2011b). However, on the basis of a case study in which the use of SNSs had interfered significantly in the life of a young adult female who had developed anxiety and insomnia symptoms, Karaiskos, Tzavellas, Balta, and Paparrigopoulos (2010) conceptualized SNS addiction as an Internet spectrum addiction disorder. Other early empirical evidence was provided by Pelling and White (2009) who referred that self-identity and belongingness predicted SNS addiction. A study by Wilson, Fornasier, and White (2010) reported that high extraversion and low conscientiousness were the predictors of SNS-addictive

tendencies. In light of Young's (1999) identification of five types of Internet addictions (i.e., computer addiction, information overload, net compulsions, cybersexual addiction, and cyber-relationship addiction), Kuss and Griffiths (2011b) argued that the pathological use of SNSs seemed to fall in the fifth category, although Griffiths (2000) had criticized this typology explaining that most of these subtypes involve individuals having addictions on the Internet rather than to it.

Starting from a biopsychological perspective which foresaw similarities between substance-related addictions and behavioral addictions, Griffiths' (2005) components model of addiction comprised six criteria that could be also applied to SNS addiction (Griffiths, 2005; Kuss & Griffiths, 2011b), namely mood modification (i.e., engagement in SNSs leading to a favorable change in emotional states), salience (i.e., behavioral, cognitive, and emotional preoccupation with the SNS usage), tolerance (i.e., ever increasing use of SNSs over time), withdrawal symptoms (i.e., experiencing unpleasant physical and emotional symptoms when SNS use is restricted or stopped), conflict (i.e., interpersonal and intrapsychic problems ensuing because of SNS usage), and

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relapse (i.e., addicts quickly reverting back in their excessive SNS usage after a period of abstinence). However, some criticism has been raised to the conceptualization of Internet-related disorders which has emphasized how everyday life behaviors tend to be too easily overpathologized and considered as addictions. Indeed, Billieux, Schimmenti, Khazaal, Maurage, and Heeren (2015) have suggested a shift from a mere criteria-based approach toward an approach focusing on the psychological processes involved.

Along with the operationalization of the core components of addiction, research interest has primarily focused on the development and validation of psychometrically robust scales, such as the six-item Bergen Facebook Addiction Scale (BFAS; Andreassen, Torsheim, Brunborg, & Pallesen, 2012) and the Facebook Intrusion Questionnaire (Elphinston & Noller, 2011). However, there has been criticism of these instruments particularly because they examine the problematic use of one specific commercial SNS (i.e., *Facebook*), rather than the activity itself (i.e., social networking) (e.g., Griffiths, 2012). For instance, the BFAS does not differentiate between potential addictions to gaming activity on *Facebook* (e.g., playing *Farmville*), gambling via *Facebook*, or constantly messaging *Facebook* friends. Griffiths (2013) has suggested using more reliable and valid addiction scales that focus upon social networking, so that current gaps in empirical knowledge can be more robustly developed.

Another line of investigation has attempted to understand the psychosocial factors influencing SNS addiction. Empirical research has reported strong relationships between SNS addiction and other forms of technological and behavioral addiction, such as Internet gaming addiction (Andreassen, Billieux, et al., 2016) and Internet addiction (Monacis, de Palo, Griffiths, & Sinatra, 2016; Wegmann, Stodt, & Brand, 2015), as well as between SNS addiction and interpersonal factors, such as demographic characteristics (Andreassen, 2015; Andreassen, Billieux, et al., 2016; Kuss & Griffiths, 2011a, 2011b), personality traits based on the five-factor model (Andreassen et al., 2013; Wilson et al., 2010), impulsivity (Wu, Cheung, Ku, & Hung, 2013), narcissism (Andreassen, Pallesen, & Griffiths, 2016; Buffardi & Campbell, 2008; Mehdizadeh, 2010), and identity styles (Monacis, de Palo, Griffiths, & Sinatra, 2017; Sinatra, de Palo, Contini, & Volpicella, 2016).

A further important but understudied element regarding the association between personality and individual differences and predicting patterns of engagement in SNS addictions has been attachment theory (Mikulincer & Shaver, 2007). The theory is based on dispositional differences in the functioning of the attachment system, considered as a behavioral regulatory system that mediates close relationships (i.e., with parents and romantic partners), reflects individuals' characteristic cognitions and emotions, and predicts different ways of interacting with acquaintances and strangers. Empirical evidence has supported the predictive role of attachment in *Facebook* and online social networking use, demonstrating that attachment style contributes to the conceptual integration of online social networks with personality characteristics (Rom & Alfasi, 2014; Yaakobi & Goldenberg, 2014). Research has shown that securely attached individuals have larger social networks and more social ties with others

(Jenkins-Guarnieri, Wright, & Hudiburgh, 2012). Anxiously attached individuals use *Facebook* more frequently and are constantly concerned about how they are perceived by others on *Facebook* (Lin, 2015, 2016). High attachment avoidance is associated with less interest in *Facebook* and its use (Oldmeadow, Quinn, & Kowert, 2013). In addition (and given this study examines Italian participants), only one Italian study has investigated the relationship between Internet addiction and attachment styles suggesting a prevalent role is played by those with an anxious attachment attitude (i.e., the Preoccupation with Relationship; Schimmenti, Passanisi, Gervasi, Manzella, & Fama, 2014).

Given the general paucity on this topic within the Italian context and in light of the aforementioned considerations, this study contributes to increasing international knowledge in the field of SNS addiction by further testing the psychometric properties of the Bergen Social Media Addiction Scale (BSMAS; Andreassen, Billieux, et al., 2016) and by providing empirical data concerning the theoretical relationship between attachment styles and SNS addiction. More specifically, it was expected that the tendency to become addicted to SNSs would be predicted by a negatively secure attachment style and a positively avoidant/anxious attachment style.

METHODS

Participants and procedure

A total of 769 questionnaires were initially collected. However, 35 of them were excluded from the subsequent analyses because they were not fully completed. Therefore, the final sample comprised 734 participants (aged 16–40 years, mean age = 21.63 years, $SD = 3.95$) with 415 males and 319 females. Four fifths of the participants' parents were married or had common-law partners (80.1%), and three quarters were high school graduates (72.2%). The sample was split into two age categories: adolescents (aged 16–19 years; $n = 270$) and young adults (aged over 20 years; $n = 464$). Participants were recruited from Italian schools and universities and selected on the basis of their availability through convenience sampling. Students were voluntarily invited to take part in this study by completing a self-report questionnaire, which took approximately 15 min to complete. Data collection occurred from May to July 2016. Potential order effects were controlled by presenting the scales in three randomized orders. The BSMAS was translated from English into Italian separately by the Italian authors of this study. The resulting Italian version was then back-translated into English by a native speaker to establish the comparability and to resolve any discrepancies (Harkness, Pennell, & Schoua-Glusberg, 2004).

Measures

Socio-demographics. The survey included questions concerning gender, age, parents' relationship status, and educational level to obtain a profile of the respondents' socio-demographic features.

BSMAS. The Italian translation of the BSMAS (Andreassen, Billieux, et al., 2016) was used to assess the

experiences in the use of social media over the past year. The BSMAS contains six items reflecting core addiction elements (i.e., salience, mood modification, tolerance, withdrawal, conflict, and relapse; Griffiths, 2005). Each item deals with experiences within a time frame of 12 months and is answered on a 5-point Likert scale ranging from 1 (*very rarely*) to 5 (*very often*). Sample items include: "How often during the last year have you used social media so much that it has had a negative impact on your job/studies?" and "How often during the last year have you felt an urge to use social media more and more?" (see Appendix).

Internet Gaming Disorder Scale – Short Form (IGD9-SF). The Italian version of the IGDS9-SF (Monacis et al., 2016; original English version by Pontes & Griffiths, 2015) assesses the severity of Internet gaming disorder (IGD) and its detrimental effects by examining both online and/or offline gaming activities occurring over a 12-month period. The scale comprises nine items corresponding to the nine core criteria of IGD defined in the American Psychiatric Association's (2013) DSM-5 (e.g., "Do you systematically fail when trying to control or cease your gaming activity?" "Have you deceived any of your family members, therapists or others because the amount of your gaming activity?" etc.). They are answered on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Higher scores indicate higher degree of gaming disorder. In this study, the scale had an excellent Cronbach's α coefficient (.97), comparable with the values reported in other studies (Pontes & Griffiths, 2015, 2016).

Attachment Style Questionnaire (ASQ). The Italian version of the ASQ (Fossati et al., 2003) comprises 40 items and was used to assess the five dimensions of adult attachment. These are Confidence (C; eight items, e.g., "I feel confident that other people will be there for me when I need them"), Discomfort with Closeness (DwC; 10 items, e.g., "I prefer to depend on myself rather than other people"), Need for Approval (NfA; seven items, e.g., "I wonder why people would want to be involved with me"), Preoccupation with Relationship (PwR; eight items, e.g., "I often feel left out or alone"), and Relationship as Secondary (RaS; seven items, e.g., "To ask for help is to admit that you are a failure"). Each item is rated on a 6-point Likert scale ranging from 1 (*total disagree*) to 6 (*totally agree*). The five scales are associated with two latent factors, Anxiety and Avoidance, according to Hazan and Shaver's (1987) and Bartholomew's (1990) conceptualizations of attachment styles. Previous findings reported adequate internal consistency and test–retest reliability (Fossati et al., 2003). In this study, Cronbach's α values for ASQ scales ranged from .72 to .85 and were in line with Fossati et al.'s (2003) study.

Statistical analyses

Before performing the data analysis, cleaning of the data set was conducted by the inspection of cases with missing values. The univariate normality of all items of the BSMAS was checked following Kim's (2013) standard guidelines. More specifically, "[f]or sample sizes greater than 300 [. . .] either an absolute skew value larger than 2 or an absolute kurtosis (proper) larger than 7 may be used as reference values for determining substantial non-normality" (Kim, 2013, p. 53). In addition, the univariate outliers were

identified using the graphic approach (i.e., inspection of the box plot), whereas the multivariate outliers were inspected using Mahalanobis distances and the critical value for each case based on the χ^2 distribution values. As a result of these procedures, no case was removed.

First, statistical analyses involved independent-samples *t*-tests to verify gender and age effects on the scores of the variables taken into account. Second, data were submitted to confirmatory factor analysis (CFA) to assess the construct validity of the BSMAS, as well as to multigroup analyses across sex and age to assess the measurement invariance (MI). CFA was performed with the mean- and variance-adjusted maximum likelihood (MLMV) estimation method, as it has been demonstrated as robust with respect to non-normality (Bentler & Dudgeon, 1996). The χ^2 and its degrees of freedom (*df*), the comparative fit index (CFI), the root mean square error of approximation (RMSEA) plus its 90% confidence interval (CI), and the standardized root mean square residuals (SRMR) were used. For χ^2, test values associated with $p > .05$ were considered good-fitting models, even though the p value of this test is sensitive to large sample size; for CFI, values greater than or equal to 0.90 were accepted as indicators of good fit (Bentler & Bonnett, 1980). Hu and Bentler (1999) demonstrated that RMSEA is one of the most informative criteria and recommended a value close to 0.06 in conjunction with an SRMR value of 0.08 or less. Furthermore, in line with Vandenberg and Lance's (2000) recommendations, MI across age and gender was evaluated through the following steps: (a) testing for invariance of number of factors (configural invariance); (b) testing for the equality of factor loadings (weak or metric invariance); and (c) testing for the equality of indicator intercepts (strong or scalar invariance). The classical approach based on the χ^2 difference ($\Delta\chi^2$) test was used. As this method is sensitive to the model's complexity and large sample size, it is recommended to compare two nested models using cutoff values of ΔCFI < 0.01 and ΔRMSEA < 0.015 for metric and scalar invariances (Chen, 2007; Cheung & Rensvold, 2002). As Bollen (1989) suggested, metric invariance is an important prerequisite for meaningful cross-group comparison.

Third, the scale reliability was examined using: (a) the average variance extracted (AVE) that assesses the extent to which the items of a specific factor converge or share a high proportion of variance (Hair, Black, Babin, & Anderson, 2010), values greater than 0.50 are considered adequate; (b) the standard error of measurement (*SEM*) that assesses the degree to which the observed scores fluctuate as a result of the measurement errors (Morrow, Jackson, Disch, & Mood, 2011). The criterion of acceptable precision was $SEM \leq SD/2$ (Wuang, Su, & Huang, 2012); and (c) the factor determinacy coefficient of the internal consistency (Tabachnick & Fidell, 2013). As noted by Brown (2003), this coefficient represents an important result of factor analysis. In particular, a high degree of determinacy indicates that "the factor score estimates could serve as suitable substitutes for the factor itself" (Brown, 2003, p. 1418). Factor score determinacy represents the correlation between the estimated and true factor scores. It ranges from 0 to 1 and describes how well the factor is measured, with 1 being the best value (Muthén & Muthén, 1998–2012). The larger the coefficient

(e.g., ≥0.70, Tabachnick & Fidell, 2013), the more stable the factors, in the sense that the observed variables account for substantial variance in the factor scores, whereas low values mean the factors are poorly defined by the observed variables.

Bivariate correlations were employed to analyze the patterns of associations between social networking addiction, IGD, attachment styles, and age. A multiple regression analysis was undertaken using forward method and entering demographic variables, including age and gender, to examine the predictive associations between attachment styles and social networking addiction. A *p* value of .05 was set as the critical level for statistical significance. All statistical analyses were performed using Mplus 7.2 and SPSS for Windows 20.0.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The investigation was approved by the research team of the Ethics Committee of the Institutional Department (December 2015). Permission to conduct the research was required from heads and deans of schools and institutions. Written informed consent was obtained from students over 18 years of age, whereas parents or legal guardians provided written consent for students aged under 18 years to participate.

RESULTS

Independent-samples t-test

Significant gender differences emerged in BSMAS scores [$t_{(732)} = 2.18$, $p < .05$] and age differences [$t_{(732)} = -5.94$, $p < .001$]. More specifically, females and young adults obtained higher scores. In addition, age differences within gender groups were found: both young adult females [$t_{(287.399)} = -3.00$, $p < .01$] and males [$t_{(345.026)} = -5.41$, $p < .001$] obtained higher scores (Table 1).

Table 1. Means and standard deviations for BSMAS scores in sex and age groups

	N	Mean	*SD*
Total sample	734	14.20	5.89
Sex			
Male	415	4.61	6.49
Female	319	13.66	4.96
Age			
Adolescents	270	12.54	4.82
Young adults	464	15.16	6.24
Female sample			
Adolescents	119	12.51	4.20
Young adults	193	14.12	5.17
Male sample			
Adolescents	135	12.11	4.94
Young adults	240	15.31	6.64

CFA

To replicate the factor structure of the BSMAS, a CFA was conducted with the MLMV method. The fit indices of the one-factor solution were acceptable ($\chi^2 = 66.853$, $df = 9$, $p < .001$; RMSEA = 0.094, 90% CI = 0.073–0.115; CFI = 0.97; SRMR = 0.03). As the RMSEA value was high, a careful inspection of the modification indices (MIs) suggested adding a covariance path between the error terms of Items 1 and 2 (MI = 45.735). After carrying out a second CFA, the indices showed a better degree of fit ($\chi^2 = 25.900$, $df = 8$, $p < .001$; RMSEA = 0.055, 90% CI = 0.032–0.080; CFI = 0.99; SRMR = 0.02). All factor loadings were significant and ranged from 0.46 to 0.86 (Figure 1).

MI across gender and age groups

To evaluate the generalizability of the model across males and females, adolescents and young adults, two multigroup CFAs using MLMV estimation were performed. For each analysis, an unconstrained model with factor loadings free to vary between subgroups was compared with a constrained model, in which the factor loadings were held constant across subgroups. Before conducting multigroup analyses, separate CFAs were performed for age and gender subgroups. The results indicated a good fit of the data for each subgroup. The MI of the one-factor solution was supported at all levels for age, whereas at metric level for gender (Table 2).

Reliability analysis

The internal consistency for the scale was examined using Cronbach's α and was very good (α = .88). The inter-item correlations were relatively high (i.e., ≥0.30). The extent to which the items of the specific factor converged or shared a high proportion of variance was assessed through the AVE method. The results provided an adequate value (AVE = 0.57). The *SEM* was calculated to assess the degree to which
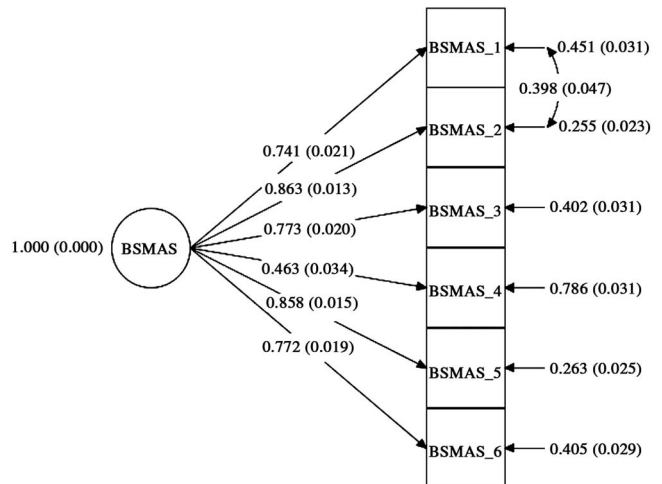

Figure 1. Summary of the confirmatory factor analysis results obtained from the six items of the Bergen Social Networking Addiction Scale (BSMAS) with two error terms correlated ($N = 734$)

Table 2. Measurement invariance of BSMAS (Italian version) by sex and age

Model	χ^2	df	$\Delta\chi^2$	Δdf	Sig.	CFI	ΔCFI	RMSEA	ΔRMSEA
Sex									
Female	23.666	8	–	–	–	0.97	–	0.078	–
Male	13.652	8	–	–	–	0.99	–	0.041	–
Configural	36.695	16	–	–	–	0.99	–	0.059	–
Metric	42.840	21	6.145	5	0.292	0.99	0.00	0.053	0.006
Scalar	86.593	26	43.753	5	<0.0001	0.97	0.02	0.080	0.027
Age									
Adolescents	9.844	8	–	–	–	0.99	–	0.029	–
Young adults	23.229	8	–	–	–	0.99	–	0.064	–
Configural	32.806	16	–	–	–	0.99	–	0.053	–
Metric	42.618	21	9.812	5	0.081	0.99	0.00	0.053	0.000
Scalar	47.331	26	4.713	5	0.452	0.99	0.00	0.047	0.006

the observed scores fluctuated as a result of the measurement errors. As expected, the value met the criterion ($SEM = 2.02 \leq SD/2 = 2.94$). Finally, the factor score determinacy coefficient was 0.95, showing an excellent degree of internal consistency.

Correlation and regression analyses

Zero-order correlations were run to assess the associations between social networking addiction, IGD, attachment styles, and age. The results showed a strong positive association between the BSMAS and IGD-SF9 scores ($r = .764$, $p < .001$), positive interrelationships between BSMAS and the four attachment styles, except for Confidence which was negatively associated with BSMAS scores (Table 3), and positive associations between BSMAS scores and age ($r = .286$, $p < .001$).

Findings from standard multiple regression analysis indicated (in general) that the set of the attachment style variables significantly predicted social media addiction [$F(7, 679) = 53.704$, $p < .001$] accounting for 35.6% of the variance (adjusted $R^2 = .350$). The significant predictors were Age, Confidence, Relationship as Secondary, and Need for Approval. Confidence was a negative predictor of SNS addiction, whereas Relationship as Secondary, Need for Approval, and Age were positive predictors of SNS addiction (Table 4).

DISCUSSION

The aim of this study was twofold: (a) to provide empirical evidence of the psychometric properties of the BSMAS in a sample of Italian adolescents and young adults and (b) to explore whether attachment styles predicted addictive

Table 4. Regression analysis with standardized and unstandardized coefficients

Model	Unstandardized coefficients		Standardized coefficients
	B	SE	B
(Constant)	8.472	2.319	–
Age	0.354	0.045	0.237***
C	−2.325	0.285	−0.303***
DwC	−0.253	0.272	−0.033
RaS	0.684	0.231	0.112**
NfA	1.473	0.268	0.228***
PwR	0.453	0.292	0.057

**$p < .01$. ***$p < .001$.

tendencies toward the use of SNSs. To achieve the first goal, construct validity and reliability were assessed in the Italian version of the BSMAS. Overall, and consistent with previous studies (e.g., Andreassen et al., 2012, 2013; Phanasathit, Manwong, Hanprathet, Khumsri, & Yingyeun, 2015; Pontes, Andreassen, & Griffiths, 2016; Wang, Ho, Chan, & Tse, 2015), the results confirmed the one-factor solution of the instrument, given that indices obtained from confirmatory analyses showed an excellent fit of the model to the data. All items significantly loaded on the hypothesized factor, although Items 1 and 2 shared an amount of variance that was not captured by the construct. In the present authors' opinion, this covariance can be statistically and theoretically justified. Indeed, to improve the RMSEA value, this covariance represented a statistical artifact. Furthermore, the preoccupation that dominates the behavior, which corresponds with the criterion of salience (Item 1), could be theoretically related to an increased amount of the activity needed to achieve the satisfactory effects, and which

Table 3. Bivariate correlations among BSMAS, AGE, IGD, and ASQ dimensions

	Age	IGD	C	DwC	RaS	NfA	PwR
Social media addiction	0.286**	0.764**	−0.478**	0.209**	0.359**	0.425**	0.186**

Note. IGD: Internet gaming disorder; C: Confidence; DwC: Discomfort with Closeness; RaS: Relationship as Secondary; NfA: Need for Approval; PwR: Preoccupation with Relationship.
**$p < .001$.

also is subsumed within the criterion of tolerance (Item 2). In terms of MI, the results of multigroup analyses provided evidence of configural, metric, and strict invariances for age groups, thus indicating that the items and the underlying construct had the same meaning among adolescents and young adults. By contrast, the equivalence across gender groups was established only at configural and metric levels. Consequently, the factor structure and the pattern of factor loadings of the construct might be considered equivalent across males and females. As for reliability, the internal consistency of the BSMAS was supported by several indicators, such as the Cronbach's α, AVE, *SEM*, and factor determinacy, whose values were found to be high, in line with those reported by other studies (Andreassen et al., 2012; Andreassen, Billieux, et al., 2016; Pontes et al., 2016). Future studies should replicate these findings in cross-cultural contexts to confirm the overall construct validity and reliability of the BSMAS.

Consistent with previous findings (Andreassen, Billieux, et al., 2016; Monacis et al., 2016), this investigation confirmed the strong association between SNS addiction and IGD. With regard to the theoretical associations between social SNS addiction and attachment styles, similarly to previous research the findings of this study generally supported the aforementioned hypotheses regarding the causal relationship between the constructs. More specifically, secure attachment orientation negatively predicted SNS addiction. Individuals characterized by high self-esteem, enjoyment in intimate relationships and in sharing feelings with others (Bowlby, 1969/1982, 1973, 1980), may be lower at risk of becoming addicted to social networking. The negative direction of the path suggests that secure attachment is a protective factor against SNS addiction, thus contrasting with some studies that have reported a positive relationship between secure attachment orientation and *Facebook* use. This association has been explained by the function of *Facebook* itself to maintain established, trustworthy friendships and to increase interpersonal competency (e.g., Jenkins-Guarnieri et al., 2012; Oldmeadow et al., 2013; Pempek, Yermolayeva, & Calvert, 2009). Indeed, as securely attached individuals use *Facebook* in a positive way and enjoy when their profile is viewed by important others, they may tend to use SNSs as tools to increase their sense of social belonging and connection. This is why they may be able to manage SNS use without developing addictive tendencies.

Moreover, and consistently with other findings (Hart, Nailling, Bizer, & Collins, 2015; Oldmeadow et al., 2013), the expected positive association between Need for Approval, referred to anxious style, and social networking addiction was found. Individuals characterized by this style manifest excessive desires and efforts for acceptance, and therefore, depend upon others. Consequently, they are more likely to engage in using SNSs for significant amounts of time to obtain approval and feedback, thus facilitating potentially addictive use. Consequently, these individuals frequently check online comments posted by others because they are motivated to seek out a positive feedback.

In contrast to some findings showing that avoidant attachment predicts restrained activities when using *Facebook*, given that avoidant individuals are more introverted and less concerned with socializing and meeting new

people (Hart et al., 2015; Oldmeadow et al., 2013), the results of this study yielded a positive relationship between "Relationship as Secondary," referred to the "avoidance" dimension, and SNS addiction. This association may be explained by the fact that these individuals tend to satisfy their need of social belonging using the online format, which affords such a dismissive approach to close relationships by maintaining a "safe" distance from others. It was also found that females were more addicted than males. This result supports Andreassen, Pallesen, et al.'s (2016), Barker's (2009), and Durkee et al.'s (2012) studies, while for age, the result is not in line. In this study, young adults emerged as being more addicted than adolescents. Regression analyses also confirmed that age was a positive predictor of SNS addiction.

Taken as a whole, this study demonstrated that the testing of the Italian version of BSMAS resulted in a psychometrically robust instrument. This study also examined the relationship between SNS addiction and attachment style, because it has been argued that attachment style is "a better candidate to explain some aspects of social media engagement" (Hart et al., 2015, p. 34) than other previously explored variables. This study is not without its limitations. As participants were sampled on the basis of self-selected convenience sampling strategy, a more representative sample of the population is required to generalize the findings. This study is also limited by the use of a self-report methodology; therefore, the data were subject to well-known associated biases (most notably social desirability and recall biases). To consider the instrument as a valid diagnostic tool, future research should assess the optimal cutoff point based on clinical or empirical data. Moreover, the cross-sectional design of this study did not allow to control the effects of external variables that could have affected the associations. Finally, longitudinal research is needed to better explore the relationship between age and SNS addiction.

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Association.

Andreassen, C. S. (2015). Online social network site addiction: A comprehensive review. *Current Addiction Reports, 2*(2), 175–184. doi:10.1007/s40429-015-0056-9

Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale

cross-sectional study. *Psychology of Addictive Behaviors, 30*(2), 252–262. doi:10.1037/adb0000160

Andreassen, C. S., Griffiths, M. D., Gjertsen, S. R., Krossbakken, E., Kvam, S., & Pallesen, S. (2013). The relationships between behavioral addictions and the five-factor model of personality. *Journal of Behavioral Addictions, 2*(2), 90–99. doi:10.1556/JBA.2.2013.003

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2016). The relationship between excessive online social networking, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors, 64,* 287–293. doi:10.1016/j.addbeh.2016.03.006

Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook Addiction Scale. *Psychological Reports, 110,* 501–517. doi:10.2466/02.09.18.PR0.110.2.501-517

Barker, V. (2009). Older adolescents' motivations for social network site use: The influence of gender, group identity, and collective self-esteem. *CyberPsychology & Behavior, 12,* 209–213. doi:10.1089/cpb.2008.0228

Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social Personality Relationship, 7,* 147–178.

Bentler, P. M., & Bonnett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88,* 588–606.

Bentler, P. M., & Dudgeon, P. (1996). Covariance structure analysis: Statistical practice, theory, and directions. *Annual Review of Psychology, 47,* 563–592.

Billieux, J., Schimmenti, A., Khazaal, Y., Maurage, P., & Heeren, A. (2015). Are we overpathologizing everyday life? A tenable blueprint for behavioral addiction research. *Journal of Behavioral Addictions, 4*(3), 119–123. doi:10.1556/2006.4.2015.009

Bollen, K. A. (1989). *Structural equations with latent variables*. New York, NY: Wiley.

Bowlby, J. (1969/1982). *Attachment and loss: Vol. 1. Attachment*. New York, NY: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York, NY: Basic Books.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Sadness and depression*. New York, NY: Basic Books.

Brown, T. A. (2003). Confirmatory factor analysis of the Penn State Worry Questionnaire: Multiple factors or method effects? *Behaviour Research and Therapy, 41,* 1411–1426. doi:10.1016/S0005-7967(03)00059-7

Buffardi, E. L., & Campbell, W. K. (2008). Narcissism and social networking web sites. *Personality and Social Psychology Bulletin, 34,* 1303–1314. doi:10.1177/0146167208320061

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling, 14,* 464–504. doi:10.1080/10705510701301834

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9,* 233–255. doi:10.1207/S15328007SEM0902_5

Durkee, T., Kaess, M., Carli, V., Parzer, P., Wasserman, C., Floderus, B., Apter, A., Balazs, J., Barzilay, S., Bobes, J., Brunner, R., Corcoran, P., Cosman, D., Cotter, P., Despalins, R., Graber, N., Guillemin, F., Haring, C., Kahn, J. P., Mandelli, L., Marusic, D., Mészáros, G., Musa, G. J., Postuvan, V., Resch, F., Saiz, P. A., Sisask, M., Varnik, A., Sarchiapone, M., Hoven, C. W., & Wasserman, D. (2012). Prevalence of pathological internet use among adolescents in Europe: Demographic and social factors. *Addiction, 107*(12), 2210–2222. doi:10.1111/j.1360-0443.2012.03946.x

Elphinston, R. A., & Noller, P. (2011). Time to face it! Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychology, Behavior, and Social Networking, 14,* 631–635. doi:10.1089/cyber.2010.0318

Fossati, A., Fenney, J. A., Donati, D., Domini, N., Novella, L., Bagnato, M., Acquarini, E., & Maffei, C. (2003). On the dimensionality of the Attachment Style Questionnaire in Italian clinical and nonclinical participants. *Journal of Social Personal Relationships, 20*(1), 50–79. doi:10.1177/0265407503020001187

Griffiths, M. D. (2000). Internet addiction – Time to be taken seriously? *Addiction Research, 8*(5), 413–418. doi:10.3109/16066350009005587

Griffiths, M. D. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance Use, 10,* 191–197. doi:10.1080/14659890500114359

Griffiths, M. D. (2012). Facebook addiction: Concerns, criticisms and recommendations. *Psychological Reports, 110,* 518–520. doi:10.2466/01.07.18.PR0.110.2.518-520

Griffiths, M. D. (2013). Social networking addiction: Emerging themes and issues. *Journal of Addiction Research & Therapy, 4,* e118. doi:10.4172/2155-6105.1000e118

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Harkness, J., Pennell, B. E., & Schoua-Glusberg, A. (2004). Survey questionnaire translation and assessment. In S. Presser, J. M. Rothgeb, M. P. Couper, J. T. Lessler, E. Martin, J. Martin, & E. Singer (Eds.), *Methods for testing and evaluating survey questionnaires* (pp. 453–473). Hoboken, NJ: John Wiley & Sons.

Hart, J., Nailling, E., Bizer, G. Y., & Collins, C. K. (2015). Attachment theory as a framework for explaining engagement with Facebook. *Personality and Individual Differences, 77,* 33–40. doi:10.1016/j.paid.2014.12.016

Hazan, D., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511–524.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1–55. doi:10.1080/10705519909540118

Jenkins-Guarnieri, M. A., Wright, S. L., & Hudiburgh, L. M. (2012). The relationships among attachment style, personality traits, interpersonal competency, and Facebook use. *Journal of Applied Developmental Psychology, 33,* 294–301. doi:10.1037/a0030946

Karaiskos, D., Tzavellas, E., Balta, G., & Paparrigopoulos, T. (2010). Social network addiction: A new clinical disorder? *European Psychiatry, 25,* 855. doi:10.1016/S0924-9338(10)70846-4

Kim, H. Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution using skewness and kurtosis. *Restorative Dentistry & Endodontics, 38*(1), 52–54. doi:10.5395/rde.2013.38.1.52

Kuss, D. J., & Griffiths, M. D. (2011a). Excessive online social networking: Can adolescents become addicted to Facebook? *Education and Health, 29*(4), 68–71.

Kuss, D. J., & Griffiths, M. D. (2011b). Online social networking and addiction – A review of the psychological literature.

International Journal of Environmental Research and Public Health, 8, 3528–3552. doi:10.3390/ijerph8093528

LaRose, R., Kim, J., & Peng, W. (2010). Social networking: Addictive, compulsive, problematic, or just another media habit. In Z. Papacharissi (Ed.), *A networked self: Identity, community, and culture on social network sites* (pp. 59–81). New York, NY: Routledge.

Lin, J. H. (2015). The role of attachment style in Facebook use and social capital: Evidence from university students and a national sample. *Cyberpsychology, Behavior, and Social Networking, 18*(3), 173–180. doi:10.1089/cyber.2014.0341

Lin, J. H. (2016). Need for relatedness: A self-determination approach to examining attachment styles, Facebook use, and psychological well-being. *Asian Journal of Communication, 26*(2), 153–173. doi:10.1080/01292986.2015.1126749

Mehdizadeh, S. (2010). Self-presentation 2.0: Narcissism and self-esteem on Facebook. *Cyberpsychology, Behavior, and Social Networking, 13,* 357–364. doi:10.1089/cyber.2009.0257

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change.* New York, NY: Guilford Press.

Monacis, L., de Palo, V., Griffiths, M. D., & Sinatra, M. (2016). Validation of the Internet Gaming Disorder Scale – Short-Form (IGDS9-SF) in an Italian-speaking people. *Journal of Behavioral Addictions, 5,* 683–690. doi:10.1556/2006.5.2016.083

Monacis, L., de Palo, V., Griffiths, M. D., & Sinatra, M. (2017). Exploring individual differences in online addictions: The role of identity and attachment. *International Journal of Mental Health Addiction.* Advance online publication. doi:10.1007/s11469-017-9768-5

Morrow, J. R., Jackson, A. W., Disch, J. G., & Mood, D. P. (2011). *Measurement and evaluation in human performance* (4th ed.). Champaign, IL: Human Kinetics.

Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Oldmeadow, J. A., Quinn, S., & Kowert, R. (2013). Attachment style, social skills, and Facebook use amongst adults. *Computers in Human Behavior, 29,* 1142–1149. doi:10.1016/j.chb.2012.10.006

Pelling, E. L., & White, K. M. (2009). The theory of planned behavior applied to young people's use of social networking web sites. *CyberPsychology & Behavior, 12,* 755–759. doi:10.1089/cpb.2009.0109

Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students' social networking experiences on Facebook. *Journal of Applied Developmental Psychology, 30,* 227–238. doi:10.1016/j.appdev.2008.12.010

Phanasathit, M., Manwong, M., Hanprathet, N., Khumsri, J., & Yingyeun, R. (2015). Validation of the Thai version of Bergen Facebook Addiction Scale (Thai-BFAS). *Journal of the Medical Association of Thailand, 98,* 108–117.

Pontes, H. M., Andreassen, C. S., & Griffiths, M. D. (2016). Portuguese validation of the Bergen Facebook Addiction Scale: An empirical study. *International Journal of Mental Health and Addiction, 14,* 1062–1073. doi:10.1007/s11469-016-9694

Pontes, H. M., & Griffiths, M. D. (2015). Measuring DSM-5 Internet gaming disorder: Development and validation of a short psychometric scale. *Computers in Human Behavior, 45,* 137–143. doi:10.1016/j.chb.2014.12.006

Pontes, H. M., & Griffiths, M. D. (2016). Portuguese Validation of the Internet Gaming Disorder Scale–Short-Form. *Cyberpsychology, Behavior, and Social Networking, 19,* 288–293. doi:10.1089/cyber.2015.0605

Rom, E., & Alfasi, Y. (2014). The role of adult attachment style in online social network affect, cognition, and behavior. *Journal of Psychology and Psychotherapy Research, 1,* 24–34.

Schimmenti, A., Passanisi, A., Gervasi, A. M., Manzella, S., & Fama, F. I. (2014). Insecure attachment attitudes in the onset of problematic Internet use among late adolescents. *Child Psychiatry & Human Development, 45*(5), 588–595. doi:10.1007/s10578-013-0428-0

Sinatra, M., de Palo, V., Contini, P., & Volpicella, V. (2016). Identity styles and internet-related addictive behaviours in adolescents. *Turkish Online Journal of Educational Technology, 15,* 1161–1165.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Allyn & Bacon.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4–69. doi:10.1177/109442810031002

Wang, C. W., Ho, R. T., Chan, C. L., & Tse, S. (2015). Exploring personality characteristics of Chinese adolescents with internet-related addictive behaviors: Trait differences for gaming addiction and social networking addiction. *Addictive Behaviors, 42,* 32–35. doi:10.1016/j.addbeh.2014.10.039

Wegmann, E., Stodt, B., & Brand, M. (2015). Addictive use of social networking sites can be explained by the interaction of Internet use expectancies, Internet literacy, and psychopathological symptoms. *Journal of Behavioral Addictions, 4*(3), 155–162. doi:10.1556/2006.4.2015.021

Wilson, K., Fornasier, S., & White, K. M. (2010). Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior, and Social Networking, 13,* 173–177. doi:10.1089/cyber.2009.0094

Wu, A. M. S., Cheung, V. I., Ku, L., & Hung, E. P. W. (2013). Psychological risk factors of addiction to social networking sites among Chinese smartphone users. *Journal of Behavioral Addictions, 2*(3), 160–166. doi:10.1556/JBA.2.2013.006

Wuang, Y. P., Su, C. Y., & Huang, M. H. (2012). Psychometric comparisons of three measures for assessing motor functions in preschoolers with intellectual disabilities. *Journal of Intellectual Disability Research, 56*(6), 567–578. doi:10.1111/j.1365-2788.2011.01491.x

Yaakobi, E., & Goldenberg, J. (2014). Social relationships and information dissemination in virtual social network systems: An attachment theory perspective. *Computers in Human Behavior, 38,* 127–135. doi:10.1016/j.chb.2014.05.025

Young, K. (1999). Internet addiction: Symptoms, evaluation and treatment. In L. VandeCreek & T. Jackson (Eds.), *Innovations in clinical practice: A source book* (Vol. 17, pp. 19–31). Sarasota, FL: Professional Resource Press.

APPENDIX

Di seguito sono riportate alcune domande sul tuo rapporto con i *social media* e sull'suo che ne fai (*Facebook*, *Twitter*, *Instagram*, ecc.). Per ciascuna domanda scegli la risposta che ti descrive meglio.

Durante l'ultimo anno con quale frequenza ...	Molto raramente	Raramente	Qualche volta	Spesso	Molto spesso
1. hai trascorso molto tempo pensando ai *social media* o hai programmato di usarli?	1	2	3	4	5
2. hai sentito il bisogno di usare sempre di più i *social media*?	1	2	3	4	5
3. hai usato i *social media* per dimenticare i tuoi problemi personali?	1	2	3	4	5
4. hai provato a smettere di usare i *social media* senza riuscirci?	1	2	3	4	5
5. sei diventato ansioso o agitato se ti è stato proibito l'uso dei *social media*?	1	2	3	4	5
6. hai utilizzato i *social media* così tanto che il loro uso ha avuto un impatto negativo sul tuo lavoro/sui tuoi studi?	1	2	3	4	5