



Exploring the Role of Problematic Social Network Site Use in the Link Between Reflective Functioning and Identity Processes in Adolescents

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Abstract

Literature highlighted that problematic social network site use might have relevant detrimental consequences on users' well-being, particularly in adolescence. However, it is still not clear which variables could be considered protective or risk factors for such problematic use. The present study aimed to fill this gap, examining the relationship between reflective functioning and adolescents' identity development, while taking problematic SNS use into account. A sample of 354 students (age range = 13–19; $M_{age} = 16.18$, $SD = 1.58$; 19.9% males) from two Italian high schools participated in the study. Results from structural equation modeling showed that adolescents with high levels of reflective functioning reported lower levels of problematic SNS use. Furthermore, problematic SNS use mediated the relationship between reflective functioning and identity development, by disfavoring identity in-depth exploration and favouring reconsideration of commitment. We discussed clinical and research implications.

Keywords Problematic SNS use · Reflective functioning · Mentalization · Identity development · Adolescence

Social networking sites (SNS) are widely used all over the world. According to recent reports (*Digital 2020—We Are Social, 2020*), 3.8 billion individuals actively use social media, and the number of social media users has significantly increased in the last decade. Furthermore, most adolescents access and use SNS on a daily basis (Shapiro & Margolin, 2014). The reason for such widespread use could be found in the variety of reasons that push people, and particularly adolescents, to connect to these platforms. In fact, SNS advantage adolescents in maintaining their relationships and optimizing communication

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(Horzum, 2016), and in satisfying their needs for social support (Throuvala et al., 2019). Other scholars underlined that SNS use could also support adolescents' identity development (e.g. Reid & Boyer, 2013). For instance, Shapiro and Margolin (2014) pointed out that SNS contributed to adolescents' identity development in a twofold way. Specifically, such platforms provided opportunities for self-disclosure that circularly could activate social comparison mechanisms in which adolescents compared their own SNS profiles with those of others. In addition, SNS could provide a safe place in which adolescents could affiliate with others while exploring and expanding their identities. However, according to the authors (Shapiro & Margolin, 2014; Vogel et al., 2014), the same processes could also be linked to several potential costs. For instance, a huge number of negative feedbacks and unhealthy social comparisons were related with low self-esteem and in general with negative outcomes. Therefore, despite the large number of desirable and positive phenomena, many researchers identified significant risks related to SNS use, especially among adolescents (Livingstone et al., 2011). In the last years, scientific community debated regarding the possibility of considering the problematic SNS use (PSNSU) as a new form of behavioural addiction (Ceranica, 2013), although it is not recognized as a discrete disorder in psychiatric classifications. PSNSU could be defined as being excessively concerned about SNS, spending a large amount of time and efforts using SNS and displaying a strong motivation to use these platforms, and these characteristics led impairments in individuals' everyday life (Andreassen et al., 2014). Thus, PSNSU might have relevant detrimental consequences on users' well-being by increasing individuals' distress (Chen & Lee, 2013), depression, and anxiety (Primack et al., 2017). In order to understand which variables could be considered risk factors, Peris et al. (2020) distinguished four types of risk factors for PSNSU in adolescence: problematic Internet use symptoms (i.e. the need to be constantly connected), social media use (i.e. to connect with peers virtually, reducing face-to-face interactions), geek behaviour (i.e. behaviours related to an intense interest in technology), and nomophobia (i.e. the fear of being disconnected).

Generally, two major perspectives have guided these studies. Griffiths (2005) proposed the component model of addiction and pointed out six components (i.e. salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse) necessary to define any kind of behaviour as an addiction, including PSNSU. In contrast, some scholars expressed concerns about the proliferation of behavioural addictions and the resultant diagnostic inflation (e.g. Starcevic et al., 2018). In order to lower the risk to pathologize and medicalize common behaviours, Kardefelt-Winther et al. (2017) define addictive behaviours as repeated and persistent behaviours in spite of their adverse consequences leading to significant harm or distress or functional impairment.

According to the compensatory model of Internet use (Kardefelt-Winther, 2014), PSNSU can be a coping strategy for dealing with negative life situations; therefore, the SNS use can be a compensation for psychosocial and emotional problems such as loneliness, low self-esteem, and insecure attachment (Benoit & DiTommaso, 2020; Musetti et al., 2022; Stănculescu & Griffiths, 2021; Steinsbekk et al., 2021). Starting from such perspectives, a vicious cycle could be detected, whereby negative affectivity and psychosocial problems lead individuals to problematically use SNS in order to compensate such problems; however, PSNSU leads the same individuals to increase negative affectivity and psychosocial problems. Such vicious cycle could be particularly relevant for adolescents. In fact, during adolescence, emotion regulation and identity processes are still in development (Erikson, 1950; Monacis et al., 2016; Musetti et al., 2021a, b). Accordingly, a huge number of research focused on emotional dysregulation, PSNSU (e.g. uncertain reflective functioning; Musetti et al., 2021a, b), and difficulties in identity development (e.g. Steijn,

2014) in adolescents. However, further studies are needed to analyse how these variables interplay. The present study aimed to explore this issue by considering the relationships among reflective functioning, identity development, and PSNSU in a sample of Italian adolescents.

Reflective Functioning and Problematic Social Networking Site Use

Reflective functioning (RF) is defined as the capacity to understand and interpret one's own and others' behaviour as an expression of mental states such as feelings, thoughts, fantasies, beliefs, and desires (Fonagy et al., 2018). Starting from its formulation, RF has been successfully applied to different areas of psychological research, such as parent-infant attachment (e.g. Slade et al., 2005), child abuse (e.g. Ensink et al., 2016), psychotherapy (e.g. Gullestad & Wilberg, 2011), and personality disorders (e.g. Fischer-Kern et al., 2010). RF developed during childhood is considered particularly important during adolescence, since adolescence is a critical period in which early signs of mental disorders could emerge, and RF is central for the successful psychosocial transition to adulthood (Braehler & Schwannauer, 2012; Duval et al., 2018).

More recently, the relationship between RF and addictive behaviours has become a new research hotspot. For instance, the general deficiencies of RF (i.e. uncertain reflective functioning) has been found to strongly predict problematic gambling in adolescence (Ciccarelli et al., 2021; Spada & Roarty, 2015), while high levels of RF have been found to negatively predict problematic mobile phone use (Musetti et al., 2020). Furthermore, analysing data from 1,308 adolescents, Musetti et al., (2021a, b) found that deficiencies in RF were positively associated with PSNSU and that both RF and self-other differentiation mediated the relationship between childhood emotional abuse and problematic SNS use. Authors argued that individuals who have difficulties in understanding others' mental states may be more prone to have difficulties in offline interpersonal relationships and to perceive SNS as a safe place where to interact more easily (e.g. by receiving immediate positive feedbacks from others). However, an excessive reliance on SNS relationships could lead to PSNSU (Saiphoo et al., 2020). In line with these findings, we assumed that deficiencies in RF could be considered risk factor for PSNSU.

Identity Processes and Problematic Social Networking Site Use

Some scholars underlined that addictive behaviours could be strictly linked to individuals' identity processes and development (e.g. Bailey, 2005; Lewis, 2017). The majority of studies analysing the relation between PSNSU and individuals' identities focused specifically on social identity. For instance, exploring which identity components could be linked to PSNSU, Albery et al. (2021) recently found that when individuals strongly identified themselves with their own group, they were more prone to use SNS problematically. Partially in contrast, Marino et al. (2016) found that adolescents' social identity predicted a higher frequency of SNS use, although it was not directly related with PSNSUS.

Some studies investigated the relationships between the problematic Internet use and identity development as conceived by the identity status paradigm (Marcia, 1966). Expanding Erikson's (1968) ideas on identity formation, Marcia focused on exploration (i.e. active questioning and weighing of various identity alternatives before making decisions about

the values, beliefs, and goals that one will pursue) and commitment (making a relatively firm choice in an identity domain and engaging in significant activities oriented toward the implementation of that choice), and other scholars unpacked these two processes. For instance, the Three-Factor Process Identity Model by Crocetti et al. (2008) pointed out three distinct but related processes from which individuals' identity was structured: *commitment*, that was to enact choices about one's life developmental domains; *in-depth exploration*, that was to actively think, reflect, and search additional information about the choices done; and *reconsideration of commitment*, that was to compare choices done with other possible alternatives.

By investigating the association between involvement in massively multiplayer online role-playing games and addiction in a sample of adolescent and emerging adult regular players, Bacchini et al. (2017) showed that reconsideration of commitment positively associated with problematic Internet use, and they concluded that being a regular player of massively multiplayer online role-playing games associated with a troubled path in the process of identity formation. However, only one study specifically focused on the relationship between identity formation and PSNSU. Following Berzonsky's social cognitive perspective of identity formation (1989), Monacis et al. (2017) found that information-oriented and diffuse-avoidance-oriented individuals tended to report high levels of problematic Internet use, problematic online gaming, and PSNSU, while normative-oriented individuals were protected from the same forms of addictive behaviours.

In the present study, we specifically focused on the Three-Factor Process Identity Model (Crocetti et al., 2008). Given that the Three-Factor Process Identity Model could be applied to a large number of one's life domains (e.g. family relationships, friends, education, work), a relevant issue was which domains needed to be investigated. Following Crocetti et al.'s (2010) suggestion to investigate domains that could be particularly relevant for individuals considered, in this study, we considered friendship and school as relevant identity domains of adolescents' life (e.g. friendship and school).

Reflective Functioning and Identity Processes

Scholars interested in studying RF and identity processes were mostly focused on individuals suffering from mental illness or individuals who experienced trauma (e.g. Dauphin et al., 2013). For instance, De Meulemeester et al. (2017) found that for those with borderline personality disorder, the impairment of mentalizing positively related with identity diffusion, and that both deficiencies in RF and identity diffusion positively related with the amount of interpersonal problems. Furthermore, McAdams and Krawczyk (2014) found that individuals with anorexia nervosa were characterized by both impairments in mentalization functions and problems in the development of stable and positive self-schemas that form their identity. According to Marchetti et al. (2017), during adolescence beliefs about the self and the others are integrated within the process of identity development (e.g. Erikson, 1963); thus, it is particularly relevant to analyse the expansion of individuals' RF and the development of an autonomous self during this "in transition" life stage. Analysing both clinical and non-clinical adolescents, Both et al. (2019) found that RF negatively associated with discontinuity of identity. Authors pointed out that impairments in RF interfered significantly in integrating the adolescent's identity, in line with Fonagy et al.'s theorization (2018). However, too little is known on the relationship between RF and identity processes in a non-clinical sample of adolescents.

The Present Study

Despite the findings reviewed, to the best of our knowledge, no study analysed the relationship between RF and identity processes—i.e. commitment, in-depth exploration, and reconsideration of commitment—while taking PSNSU into account. Building on a developmental perspective, the aim of this study was to analyse whether and to what extent RF is associated with PSNSU and whether and to what extent RF and PSNSU associated with adolescents' identity. Specifically, we hypothesized that:

- H1. RF negatively associated with PSNSU.
- H2. RF positively associated with identity commitment and identity in-depth exploration, while it negatively associated with identity reconsideration of commitment.
- H3. PSNSU negatively associated with identity commitment and identity in-depth exploration, while it positively associated with identity reconsideration of commitment.
- H4. PSNSU mediated the relationship between RF and identity dimensions (i.e. commitment, in-depth exploration, and reconsideration of commitment).

Methods

Participants

A total sample of 354 students aged between 13 and 19 years participated in the study (19.9% males, 7 missing). We recruited participants from two high schools specialized in humanities and science. The schools were located in urban areas of the Emilia Romagna and Sicily regions in Italy, respectively. Most of the participants were Italians ($n=337$, 95.2%), and declared their parents were married ($n=276$, 78.0%), 62 participants declared their parents were separated (17.5%), while only 16 reported having a single parent (4.5%).

Procedure

Data were collected using a convenience sampling method from December 2019 to February 2020. Prior to data collection, we obtained a permission of the Head of the school in each of the selected schools. The schools sent a presentation letter explaining the research purpose and procedure to the families of the students: parents or legal guardians had to sign the informed consent, and the adolescents gave their assent. We administered the questionnaires anonymously in the regular class settings and in the presence of teachers and researchers. Students completed the survey in less than 20 min, and no missing data were found among all response questions. Upon completion, all participants were thanked, debriefed, and dismissed. Students did not receive any compensation for participation. We designed and carried out the study according to the Ethical Code of the Italian Association of Psychology (AIP), the European Code of Conduct for Research Integrity (ECCRI), and the 1964 Helsinki Declaration and its later amendments.

Measures

Participants completed an anonymous questionnaire composed of different scales related to their RF, their SNS use, and their identity development in both the domains of friendship relationship and school.

Reflective Functioning (RF) It was measured through the Reflective Functioning Scale (RFQ-8; Fonagy et al., 2016; Italian validation by Morandotti et al., 2018). The scale is composed of 8 items on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) measuring to what extent participants are able to understand the self and others in terms of internal mental status (e.g. “When I get angry, I say things without really knowing why I am saying them”; $\alpha = .72$; $\omega = .76$ [.72, .80]). We computed a RF composite score following the same procedure of Musetti et al. (2020). Thus, we first computed two composite scores following the original procedure (e.g. Fonagy et al., 2016), scoring half of the items twice and splitting the information into two different variables: reflective functioning certainty (RF_c) and reflective functioning uncertainty (RF_u). Then, we computed a composite RF score by subtracting RF_c from RF_u, so negative RF values indicated reflective functioning uncertainty, and positive RF values indicated reflective functioning certainty (Müller et al., 2021).

Problematic SNS Use (PSNSU) It was measured through the Italian version of the Internet Addiction Test (IAT; Ferraro et al., 2007) adapted for SNS use. The scale adaptation was successfully applied to SNS context (e.g. Musetti et al., 2021a, b), and it was composed of 20 items on a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*always*) measuring the extent to which participants reported problematic involvement with SNS (e.g. “How often do you find that you stay on social networking sites longer than you intended?”; $\alpha = .91$; $\omega = .92$ [.90, .93]).

Identity It was measured through the Italian version of Utrecht-Management of Identity Commitments Scale (U-MICS; Crocetti et al., 2010). The scale is composed of 13 items on a 5-point Likert-type scale (1 = completely untrue, 5 = completely true), and we administered it twice to assess participants' identity in both friendship relationships and school. U-MICS includes three dimensions measuring individuals' identity commitment (e.g. “My best friend/My education gives me security in life”; 5 items; friendship: $\alpha = .89$, $\omega = .89$ [.87, .91]; school: $\alpha = .92$, $\omega = .92$ [.91, .93]), in-depth exploration (e.g. “I try to find out a lot about my best friend/my education”; 5 items; friendship: $\alpha = .74$, $\omega = .73$ [.69, .78]; school: $\alpha = .78$, $\omega = .78$ [.75, .82]), and reconsideration of commitment (e.g. “I often think it would be better to try to find a different best friend/education”; 3 items; friendship: $\alpha = .86$, $\omega = .86$ [.84, .89]; school: $\alpha = .83$; $\omega = .85$ [.82, .87]).

Results

Descriptive Statistics

As far as students' Internet usage, on average, adolescents in our sample declared to spend from 1 to 14 h a day on Internet ($M = 4.79$, $SD = 2.36$) and to spend from 1 to 12 h a day

using smartphone, computer, tablet, and console ($M=5.67$, $SD=2.67$). More specifically, participants declared they spend most of their time online on social media ($M=2.99$, $SD=2.16$), watching movies ($M=2.28$, $SD=1.81$), and only a small portion of their time playing video games ($M=.69$, $SD=1.46$).

Descriptive analyses, with means and bivariate correlations among research variables, and among research variables and gender (female = 1), age, and hours a day spent on Internet, are presented in Table 1.

Gender (female = 1) weakly and negatively associated with RF and reconsideration of commitment. Age moderately and negatively related with PSNSU. As far as hours a day spent online, they positively related with PSNSU and weakly and negatively related with identity commitment. RF negatively associated with PSNSU and reconsideration of commitment and positively associated with identity commitment. PSNSU significantly associated with all identity dimensions. Specifically, it was negatively related with identity commitment and in-depth exploration, while positively related with reconsideration of commitment. Lastly, commitment was strongly and positively associated with in-depth exploration and weakly and negatively associated with reconsideration of commitment.

Testing the Model

To test our hypothesis, we performed a semi-full model using M-PLUS, v. 8.1 statistical package (Muthén et al., 2017). All model variables were latent variables, with the exception of RF. We constructed a semi-full model in which we considered RF as exogenous variable and PSNSU, and commitment, in-depth exploration and reconsideration of commitment as endogenous variables. Furthermore, given the high number of items for both PSNSU (20 items) and U-MICS scales (commitment, in-depth exploration, and reconsideration of commitment variables in friendship relationships and school identity domains for a total of 26 items), in order to compute a parsimonious model, we used parcels of items for both PSNSU and U-MICS dimensions. Specifically, we computed three parcels by the sum of PSNSU items randomly selected (2 parcels defined by 7 items and 1 parcel defined by 6 items) and used these parcels as indicators of PSNSU latent variable. In addition, in line with Crocetti et al.'s (2010) procedure, we computed 9 parcels by the sum of U-MICS items: 3 parcels for commitment (1 parcel defined by 4 items, 2 parcels defined by 3 items), 3 parcels for in-depth exploration (1 parcel defined by 4 items, 2 parcels defined by 3 items), and 3 parcels for reconsideration of commitment (all defined by 2 items). The three dimensions of U-MICS scale (commitment, in-depth exploration, and reconsideration of commitment) were allowed to covary.

We tested both univariate and multivariate data distribution. Variables showed a normal univariate distribution, with both skewness and kurtosis between -1 and 1 . However, when it comes to multivariate data distribution, we found that variables were not normally distributed considering Mardia's coefficient of multivariate kurtosis (Mardia, 1970) (n variables = 13; coefficient of multivariate kurtosis = 212.13); therefore, we performed maximum likelihood parameter estimates with standard errors and a chi-square test statistic that are robust to non-normality in Mplus (MLR) (Savalei, 2010).

In order to assess the goodness of fit of our model, we considered multiple indices of comparative fit index (CFI), Tucker Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SMSR). According to Kenny's (2015) suggestions, CFI and TLI values greater than 0.95 and SMSR

Table 1 Means, standard deviations, and Pearson's bivariate correlations among variables—point-biserial correlation for binary variables (i.e. gender) ($n = 354$)

	Observed range	M	SD	1	2	3	4	5	6	7
1. Gender (1 = f)	0, 1	-	-	1						
2. Age	13, 19	16.18	1.58	-.00	1					
3. Hours spent online	1, 14	4.79	2.36	-.02	-.00	1				
4. RF	-16, 18	2.44	7.61	-.11*	.00	-.05	1			
5. PSNSU	20, 76	40.26	12.61	-.03	-.20**	.25**	-.24**	1		
6. Commitment	1, 5	3.69	.73	-.07	-.01	-.13*	.21**	-.14*	1	
7. In-depth exploration	1, 5	4.43	.58	.03	.06	-.05	-.01	-.13*	.49**	1
8. Reconsideration of commitment	1, 5	2.51	.76	-.13*	.06	.10	-.18**	.18**	-.11*	.10

* $p < 0.05$; ** $p < 0.01$

value lower than .05 denote an excellent model fit; values of CFI higher than 0.90 and of RMSEA smaller than .08 indicate of an acceptable fit.

The full model showed an acceptable fit (Byrne, 2012; Kenny, 2015), $\chi^2(56) = 180.912$, $p < .001$, $CFI = .94$, $TLI = .92$, $RMSEA = .08$, $p < .001$, 90% CI [.067, .092], $SRMR = .057$. The model explained the 6% for commitment, the 5.7% for in-depth exploration, the 6.3% for reconsideration of commitment, and the 6.3% for PSNSU. Model results are reported in Fig. 1 and in Table 2.

Results showed that RF negatively related to PSNSU, thus confirming our H1. As far as identity dimensions, RF positively related to commitment and negatively related with reconsideration of commitment. No relations were found between RF and in-depth exploration, thus partially confirming our H2. Furthermore, PSNSU negatively associated with in-depth exploration and positively associated with reconsideration of commitment, while no relation was found with commitment, thus partially confirming our H3. Lastly, PSNSU significantly mediated the relation between RF and in-depth exploration and the relation between RF and reconsideration of commitment. No result was found on identity commitment, thus partially confirming our H4.

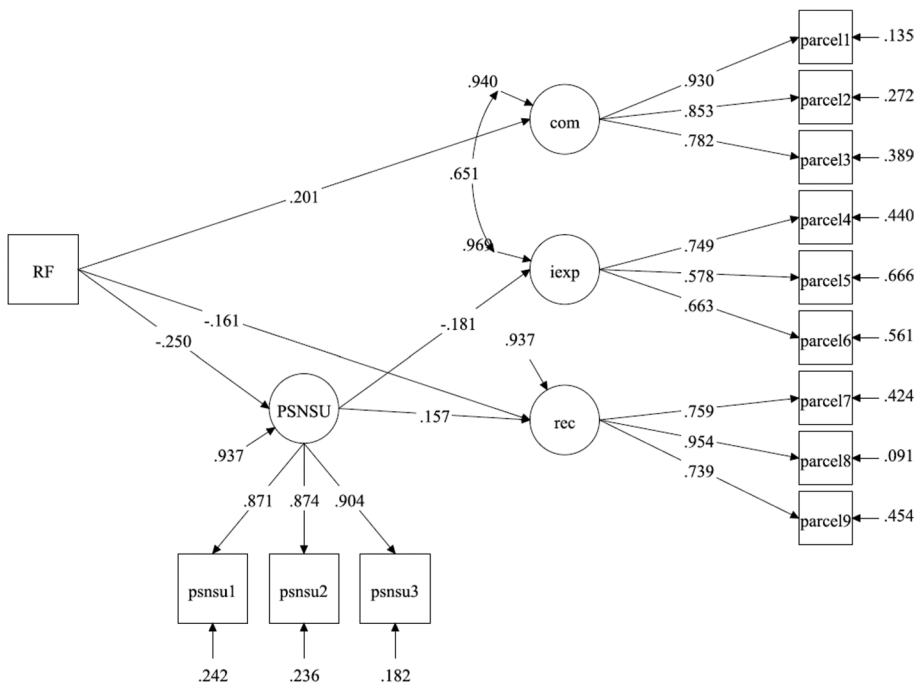


Fig. 1 Tested model ($n = 354$). Note: RF, reflective functioning; PSNSU, problematic social network site use; com, commitment; iexp, in-depth exploration; rec, reconsideration of commitment

Table 2 Standardized estimates of direct and indirect effects of the tested model ($n = 354$)

	<i>B</i>	<i>SE</i>	<i>Z</i>	95% <i>CI</i>
COM on				
PSNSU	-.099	.067	-1.491	-.230, .031
RF	.201	.058	3.461***	.087, .315
IEXP on				
PSNSU	-.181	.070	-2.596**	-.318, -.044
RF	-.034	.087	-.389	-.204, .137
REC on				
PSNSU	.157	.065	2.396*	.029, .285
RF	-.161	.058	-2.763**	-.276, -.047
PSNSU on				
RF	-.250	.056	-4.471***	-.360, -.141
COM with				
IEXP	.651	.064	10.168***	.525, .776
REC	-.073	.064	-1.147	-.198, .052
IEXP with				
REC	.131	.074	1.771	-.014, .276
Indirect effects				
RF → PSNSU → COM	.025	.018	1.400	-.010, .060
RF → PSNSU → IEXP	.045	.021	2.174*	.004, .086
RF → PSNSU → REC	-.039	.019	-2.048*	-.077, -.002

RF reflective functioning, *PSNSU* problematic social network site use, *COM* commitment, *IEXP* in-depth exploration, *REC* reconsideration of commitment

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Discussion

To the best of our knowledge, this was the first study examining the role of RF in predicting adolescents' identity processes, while taking PSNSU into account. Confirming our hypothesis, results showed that adolescents who had the capacity to understand and interpret one's own and others' behaviour in terms of mental states reported lower levels of PSNSU. In other words, RF could represent a protective factor for adolescents, since a general deficiency of RF enhanced adolescents' PSNSU. In line with previous findings (Musetti et al., 2020), it is possible to suppose that individuals who have no trouble in understanding their own and others' mental states do not need a "safe place" such as SNS in which to interact. Indeed, some SNS characteristics—i.e. the possibility to control social interactions by choosing when and how communicate with someone, the asynchronous nature of communications, and the possibility to interrupt the interaction at any time—could provide adolescents a way to regulate their mental states and at the same time to satisfy otherwise unmet social needs (Scimeca et al., 2014), making them feel more comfortable during social interaction. Probably, such compensatory use of SNS could foster adolescents to overuse these platforms, also favouring a problematic use (Monacis et al., 2021) as data we collected seemed to show. Furthermore, consistent with previous studies, results showed that being male was significantly and positively associated with RF (Musetti et al., 2020, 2021a, b) and reconsideration of commitment (Morsunbul et al., 2014).

Since emotional and cognitive self-reflection has been considered the basis for identity development (e.g. Bateman, 2006), we also analysed the relations between RF and identity processes, focusing on the Three-Factor Process Identity Model (Crocetti et al., 2008) as theoretical framework. As Fonagy et al. (2018) theoretically pointed out, deficiencies in RF could interfere in adolescents' identity formation. Accordingly and partially in line with our expectations, results showed that RF positively related to identity commitment and negatively related to identity reconsideration of commitment, while we found no direct relation with in-depth exploration. These findings are in line with the literature evidence on the positive role of commitment and the negative role of reconsideration of commitment for adolescents' identity formation (e.g. Morsunbul et al., 2016). Thus, deficiencies in RF interferes with adolescents' identity development by discouraging them to enact choices about life developmental domains and by encouraging them to continually compare choices done with other possible alternatives.

Furthermore, results also showed that PSNSU fully mediated the relationship between RF and identity in-depth exploration, and it partially mediated the relationship between RF and reconsideration of commitment. Specifically, adolescents with deficiencies in RF tended to use SNS more problematically, and, in turn, PSNSU was negatively related with identity in-depth exploration and positively related with reconsideration of commitment. In other words, PSNSU seemed to bring adolescents to not actively search information about identity choices done but to directly compare choices done with other alternatives. According to Meeus et al. (2012), in-depth exploration and reconsideration of commitment were two processes from which adolescents manage their identity commitments. Continuously monitoring actual commitments (i.e. in-depth exploration) allowed adolescents to be more conscious and to maintain them. On the other hand, comparing present commitments with alternative ones (i.e. reconsideration of commitment) facilitated adolescents in deciding whether actual commitments need to be changed. In this sense, in-depth exploration and reconsideration of commitment could be considered different processes respectively related to identity certainty and identity uncertainty. Our findings suggested that adolescents who problematically use SNS reported high levels of identity uncertainty (i.e. low in-depth exploration and high reconsideration of commitment). Two possible explanations for this process can be pointed out. On one hand, SNS could be considered fertile ground for identity exploration, providing adolescents a safe place in which they can experience new ways of being (Boursier & Manna, 2018). However, when SNS use becomes problematic, such exploration risks becoming a continuous questioning about who one could be, more than who one is. Thus, all possible identity alternatives are taken into consideration and evaluated, not allowing the adolescent to "stop" to reconsider current commitments and evaluate them. Moreover, since self-uncertainty strictly related to a frequent comparison of oneself with others on SNS (e.g. Israelashvili et al., 2012), it is also possible to argue that adolescents who problematically use SNS tended to frequently compare themselves with others, questioning about their actual commitments, in order to enhance self-concept through such comparisons. Results of the present study showed that the PSNSU and the identity uncertainty associated with it are favoured by deficiencies in RF.

Our findings could be a starting point for a clinical reflection on this topic. Mentalization-based interventions could help adolescents with PSNSU to develop RF, improve their self-regulations skills, and dampen dysfunctional coping strategies such as addictive behaviour as a means of self-regulation. In addition, the ability to recognize one's own and others' mental states more accurately may help adolescents to feel less worried about judgement and fear to explore new relationships (Mandarino, 2014). Ultimately, given the established association between protracted identity difficulties and increased developmental

risk (Doeseelaar et al., 2018), early detection of clinically relevant identity dysfunction among adolescents is needed for planning suitable interventions (Musetti et al., 2021a, b). Our findings could help clinicians to identify risk factors of identity disturbance by preventing maladaptive developmental trajectories.

The present study is not without limitations. First of all, the cross-sectional nature of this research design does not allow to infer causal relationships among variables. Furthermore, despite they are widely used in international literature, we used only self-report measures. In addition, our results could be influenced by other variables not included in our model, such as childhood traumatic experiences, insecure attachment, or psychopathological symptoms. Furthermore, our sample was mostly composed of females, and such imbalance could have partly influenced our results, despite correlations between gender and the other research variables were very weak. Further longitudinal studies should test the causal relationships among constructs considered. Furthermore, given that theoretical framework we used is focused on identity processes, further studies should also test whether and to what extent such relationships change over time during adolescence.

These limitations notwithstanding, we conclude that this is the first study to demonstrate the relationships between deficiencies in RF, PSNSU, and unwealthy identity processes in adolescence. Our findings contribute to the literature by suggesting that adolescents with difficulties in recognizing one's own and others' mental states are more likely to display PSNSU. These factors may contribute to reduce adolescents' in-depth exploration and promote an excessive reconsideration of identity commitment, which can develop as a consequence of a maladaptive attempt to self-regulate through an excessive immersion in SNS environment.

Declarations

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all participants and from all participants' parents or tutors for being included in the study. Since our study did not involve clinical trials on human participants, our university policies did not require us to have a formal approval for this study. However, data collected were totally anonymous, as well as processed in an aggregate manner, in compliance with Italian ethical standards, the European GDPR, and the guidelines of the Helsinki Declaration of 1975, as revised in 2000.

Conflict of Interest The authors declare no competing interests.

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