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The Role of Preference for Online Interactions in the Relationship Between Self-Concept Variables and Problematic Use of Social Networks

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Abstract

The present research investigated the relationships between two self-concept variables (i.e., discrepant self-esteem and low self-concept clarity) and problematic use of social networking sites (SNs). Based on earlier evidence, we expected that these relationships would be mediated by one's preference for online interactions. A sample of 176 Italian teenagers (71% female, M_{age} = 16.81 years) completed self-reported questionnaires that assessed their implicit and explicit self-esteem, self-concept clarity, problematic SNs use, and loneliness (to statistically control for its influence). Our hypotheses were supported only in the case of low self-concept clarity, not in the case of discrepant self-esteem. We found problematic SNs use in the case of teens with low self-concept clarity and convergent high self-esteem (i.e., high implicit and high explicit self-esteem), and these relationships were mediated by the preference for online interactions. These results suggest that the preference for online interactions is an important mediator variable that should be considered as a change mechanism in the relationships between self-concept variables and problematic SNs usage.

Keywords: social networks use; self-concept clarity; self-esteem; preference for online interactions

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Introduction

In the current era, the frequency of human interactions mediated by technological solutions is on the rise. People have numerous alternatives for connecting with others using social networking sites (SNs), and an independent analysis showed that the percentage of American users of the most important SNs increased about 10 times between 2005 and 2015 (Perrin, 2015). This trend continued in the following years, as the largest SN (i.e., Facebook) reported 2.93 billion monthly active users in the second quarter of 2022 (Dixon, 2022). Given the considerable number of daily users, researchers have investigated the effects of SNs usage. Recent literature reviews suggested that passive SNs usage (i.e., monitoring others' online behaviour without interacting with them) has negative consequences on subjective well-being, while active SNs usage (i.e., interacting with others and setting up connections) enhances subjective well-being (Verduyn et al., 2017). These results indicate that passive SNs usage can have negative consequences even without excessive usage. Furthermore, empirical evidence suggests that excessively frequent usage of SNs can have serious effects on human functioning. Such usage has been linked to various negative outcomes, including sleep disturbances, poor mental health, and diminished academic

achievements (Swain & Pati, 2021). In this vein, we see problematic SNs use as a form of problematic Internet use. Adhering to the working definition presented by Fineberg and colleagues (2022), problematic SNs use can be defined as the persistent inability to control social media use, even when it results in neglecting other life interests and activities. However, it is important to emphasize that problematic SNs use should not be interpreted as a form of Internet addiction, as the existence of such an addiction is still debated in the literature (see Ryding & Kaye, 2018).

To explain the high rates of SNs usage, researchers (e.g., Kuss & Griffiths, 2011) suggested that excessively frequent usage of SNs could be a particular form of addiction. It is important to emphasize, however, that frequent use of the SNs and problematic use, while interconnected, are distinct phenomena (Boer et al., 2020; van den Eijnden et al., 2016, 2018). A study in 29 countries indicated that in countries where intense SNs usage is considered a normative behavior among adolescents, it might even have a positive contribution to well-being (Boer et al., 2020). Moreover, research studies (e.g., Andreassen et al., 2016) reported that problematic SNs usage is associated with psychiatric symptoms such as adult ADHD, obsessive-compulsive disorder, and anxiety.

Given the consequences of problematic SNs usage, researchers investigated its potential predictors and focused on personality (Kayiş et al., 2016; Marino et al., 2018) and self-concept variables. Using a meta-analytical approach, Liu and Baumeister (2016) concluded that problematic SNs usage is associated with having a less positive global self-evaluation (i.e., low self-esteem – Rosenberg, 1965) and with having a feeling of grandiosity and entitlement (which is characteristic to narcissistic self-views – Back & Morf, 2018). Furthermore, other research studies reported positive associations between poor self-concept clarity (Campbell, 1990) and problematic SNs usage (Israelashvili et al., 2012; Quinones & Kakabadse, 2015). The relation between self-concept variables and how individuals use the SNs is most probably complicated by the fact that SNs provide vast amounts of relevant information about other people, which is useful for social comparison (e.g., Chua & Chang, 2016; Throuvala et al., 2019). Previous studies (e.g., Maroiu et al., 2016) reported that drawing self-worth from being in a competition with others (i.e., through social comparisons) is associated with high explicit self-esteem. Hence, the process of social comparisons facilitated by social networking sites can serve as a significant source of self-relevant information. In addition, SNs provide feedback about what others think about them and about their opinions, for example through reactions (or lack of reactions) to their posts (e.g., Chua & Chang, 2016). SNs can, therefore, be used to gather self-relevant information in an online social context, offering a less threatening alternative to face-to-face interactions. We might expect that this draws individuals with an insecure self-concept to the use, and potentially the abuse of SNs. Using SNs provides positive, negative, or even ambiguous feedback about us. When using SNs, the reactions of one's contacts (or their absence of reactions) might be perceived by the user as positive or negative reinforcements, and how one deals with this feedback could depend on one's self-concept. In this vein, previous studies showed that individuals with secured self-views are generally less sensitive to negative feedback (Borton et al., 2017; Stucke & Spoorer, 2002), while individuals with fragile self-views are affected by positive and negative feedback. Consequently, it is reasonable to expect that SNs play a complex role when it comes to the gathering of self-descriptive information. Furthermore, it is also plausible that the structure of our self-knowledge influences our usage of SNs, and self-concept insecurities may be related to their problematic use. For instance, Chua & Chang (2016) found that teenage girls reported that feelings of low self-esteem and insecurity were at the basis of peer comparison, and these girls invested increased effort to present a positive self-image by editing the selfies they posted.

The aim of the present research study is to investigate the relationships between two self-concept variables, namely self-esteem and self-concept clarity, and problematic SNs usage. The dual-process perspective (Bosson et al., 2000), distinguishes between two forms of self-esteem: explicit self-esteem (i.e., self-reported, discursive evaluations of the self) and implicit self-esteem (i.e., automated, less conscious valence associated with the self). Inconsistencies between these two forms can be associated with defensive mechanisms against failure (Zogmaister & Maricuţoiu, 2022) or with various contingencies of self-worth (Maroiu et al., 2016). In the present study, we argue that the inconsistencies between these two forms of self-esteem are associated with problematic SNs usage. Furthermore, based on the idea that online interactions are less threatening (Quinones & Kakabadse, 2015), we investigated whether the preference for online interactions mediates the relationships between the self-concept variables (i.e., self-esteem and self-concept clarity) and problematic SNs usage. If the mediation effect is confirmed, it may support an intervention strategy aimed at reducing problematic SNs use among adolescents who experience conflicting self-perceptions.

Self-Concept Variables as Predictors of Problematic SNs Usage

The empirical evidence regarding the relationships between self-worth and SNs usage was reviewed by Liu and Baumeister (2016) and by Marino and his colleagues (2018). On the one hand, Liu and Baumeister (2016) argued that SNs encourage individuals to display their positive self-views, to collect mostly favourable responses (i.e., by removing contacts with unfavourable responses, or by removing activities that collected unfavourable responses), and to access many known or unknown individuals. Therefore, individuals with strong motivation to seek external validation of their own self-worth can find that SNs are useful for satisfying their validation needs. Liu and Baumeister (2016) reported insignificant correlations between self-reported self-esteem and various indices of SNs usage (e.g., number of online interactions, number of photos shared on the SNs). Therefore, their data did not support the expected positive relationship between self-esteem and SNs usage.

On the other hand, Marino and his colleagues (2018) argued that individuals with low self-worth were more likely to prefer to communicate online because they experienced difficulties in face-to-face interactions, therefore the negative self-views should be associated with problematic Facebook usage. Although their results supported the expected negative relationship between self-esteem and problematic SNs usage, the nature of the relation between self-view and SNs usage is still unclear. The explanations advanced by Marino and his colleagues (2018) for the negative relationship between self-esteem and problematic SNs usage involved other variables such as one's fragility of self-esteem or the individuals' preference for online communication. Therefore, in the present study we will focus on these variables.

Fragile Self-Esteem as a Predictor of Problematic SNs Usage

The fragility of self-esteem refers to easily challenged feelings of self-worth that require frequent validation (Jordan & Zeigler-Hill, 2018). The fragility of self-esteem can be assessed using various strategies, and in the present research we used the inconsistent (or discrepant) self-esteem (Ziegler-Hill, 2006) and the self-clarity perspective (Campbell, 1990).

The dual-process perspective on self-esteem differentiates between explicit (or self-reported) self-esteem and implicit (or automated) self-esteem (Bosson et al., 2000). The inconsistency between these two forms of self-esteem is interpreted as fragile self-esteem and numerous research studies have used this approach (Jordan & Zeigler-Hill, 2018). This perspective of inconsistent self-esteem was used in previous studies that investigated Internet usage (Stieger & Burger, 2010) or the posting of photos on Facebook (Subramanian et al., 2014), but their conclusions were not convergent. Subramanian and colleagues (2014) reported that the smallest number of photos posted on Facebook could be found in the case of participants with low implicit and high explicit self-esteem, and this finding is convergent with Stieger and Burger (2010). However, unlike Stieger and Burger (2010), the number of photos posted on Facebook was also small in the case of participants with high implicit and low explicit self-esteem (Subramanian et al., 2014). As there are two types of inconsistencies between the two forms of self-esteem (i.e., high explicit-low implicit self-esteem, and low explicit – high implicit self-esteem), we can only conclude that problematic SNs use is associated with some form of inconsistency regarding self-esteem. However, it is difficult to formulate a specific conclusion regarding which form of inconsistency is associated with problematic SNs use, because of the different operationalizations of Internet or SNs usage and because of the different analytical approach used by these two studies. Based on these findings, we argue that inconsistencies between implicit and explicit self-esteem are relevant for explaining the variance of problematic SNs usage. Therefore, we formulated our first hypothesis for this study as follows:

H1: Higher levels of problematic SNs usage can be found in the case of users with inconsistent self-esteem.

The idea of self-concept clarity was advanced by Campbell (1990), who observed that individuals with low scores on self-esteem did not hold negative evaluations of themselves but responded inconsistently to classical self-reported measures of self-esteem (e.g., the Rosenberg self-esteem scale). Therefore, poor self-concept clarity can be understood as having inconsistent self-views. Because low levels of self-concept clarity are associated with low explicit self-esteem (Campbell et al., 1996) and narcissism (Fukushima & Hosoe, 2011), researchers have suggested that poor self-concept clarity is a predictor of Internet usage (Israelashvili et al., 2012; Quinones & Kakabadse, 2015). Israelashvili and his colleagues (2012) suggested that Internet overuse could be related to self-clarity exploration (p. 418). Users with low levels of self-concept clarity perceive online interactions as safer compared

with real-world interactions, therefore SNs usage is a form of meeting their social needs (Quinones & Kakabadse, 2015). Therefore, we formulated our second hypothesis as follows:

H2: High levels of problematic SNs usage are associated with low levels of self-concept clarity.

Preference for Online Interactions

The results of previous research studies supported the existence of a relationship between self-esteem inconsistencies and problematic SNs usage. However, we have scarce information about the mechanisms that explain these relationships. One potential mediator for this relationship is the preference for online interactions. Online users develop this preference when these interactions are more satisfying as compared with offline (or face-to-face) interactions (Chung, 2013). This is important because it suggests that the preference for online interactions is a solution for relating with others in a protected manner (Joinson, 2004; Quinones & Kakabadse, 2015) that allows for "safe" interactions. The apparent "safety" of online interactions is useful for individuals with inconsistent self-esteem, who have a strong need to develop defensive strategies when interacting with potential negative self-relevant information (Jordan et al., 2003a, 2003b). Consequently, we formulated our third hypothesis as follows:

H3: There is a positive relationship between inconsistencies in self-esteem and the preference for online interactions.

In his early study, Caplan (2003) suggested that the preference for online interactions is related with negative self-views (i.e., self-reported depression, self-reported loneliness), and with problematic Internet usage (i.e., excessive Internet use, compulsive Internet use). Therefore, Caplan (2003) suggested that the preference for online interactions mediates the relationship between the negative self-views and problematic Internet usage. However, given the evidence presented above regarding the relationship between inconsistent self-esteem and problematic SNs usage, we formulated our fourth hypothesis as follows.

H4: The preference for online interactions mediates the relation observed in H1 between inconsistencies in self-esteem and problematic SNs usage.

As we mentioned before, previous studies (e.g., Quinones & Kakabadse, 2015; Joinson, 2004) indicated that individuals with low self-concept clarity need safe environments to relate to others, therefore they prefer to interact with others via the Internet (i.e., as compared with face-to-face interactions). In turn, the preference for online interactions requires intensive usage of the Internet and SNs (Caplan, 2003; Chung, 2013). The preference for online interactions mediated the relationships between self-concept clarity and compulsive Internet usage, while controlling for self-esteem (Quinones & Kakabadse, 2015). To the best of our knowledge, this mediation effect has not been replicated yet; therefore, we formulated our final hypotheses as follows:

H5: Low self-concept clarity is associated with the preference for online interactions.

H6: The preference for online interactions mediates the relation observed in H2 between self-concept clarity and problematic SNs usage.

Loneliness as a Correlate of Problematic SNs Usage

Loneliness is "a situation experienced by the individual as one where there is an unpleasant or inadmissible lack of (quality of) certain relationships" (Gierveld, 1998, p. 73). It is often included in investigations of problematic Internet usage (for a review, see Moretta & Buodo, 2020). Although loneliness was initially considered as a motivation for high SNs usage, recent reviews suggested that loneliness is a consequence of Facebook usage (Song et al., 2014). Even though its relationships with problematic SNs usage are not yet established, loneliness is also associated with low self-esteem (Vanhalst et al., 2013). Therefore, in the present research study we controlled for the individual differences in loneliness. This approach allowed for the elimination of loneliness as an alternative explanation regarding the relations between the self-concept variables and problematic SNs usage.

Methods

Participants

The sample consisted of 176 Italian high school students from 14 to 20 years of age, with a mean age of 16.813 (*SD* = 1.283, 29% male, 71% female). The sample size was based on the available resources, and the data was collected in April 2012. As reported below, the sensitivity analysis indicated that this sample size was appropriate for the purposes of the present research. The self-reported age at which they started using the Internet varied between 7 and 16 years (*M* = 12.212, *SD* = 1.731), but the great majority (86.1%) started between 10 and 14 years of age. The place where they most often accessed Internet was a computer in their bedroom (for 48.4% of them), another computer at home, not in their bedroom (29.7%), their smartphone or tablet (21.2%), a computer in their school (1.9%), a computer in the parents' office (1.3%), a computer of a friend (0.6%), other devices (0.6%)[1]. This indicated that their Internet usage was, in most cases, characterized by a high level of privacy and potential absence of parental control.

Procedure

Participants answered the questionnaires collectively and anonymously in their classroom, after obtaining informed consent from parents. Participants received a booklet containing the scales, in the order in which they are described below. After responding to these scales, participants indicated their age, sexual gender, the first two letters of their name, the age at which their begun using Internet, and their main source of Internet access (the response options where: *computer at school*, *computer in my room*, *computer in another room of the house*, *Internet point*, *my smartphone*, *other*). They had to rank each type of access from the most often used. We did not ask the initial of the surname to guarantee participants a higher level of anonymity, given the socially sensitive contents of the questionnaire. As a further guarantee of anonymity, once they had finished to fill the booklet participants inserted it in an envelope, sealed it, and handed it over to the experimenter.

The research was conducted in two Italian schools. In the first school all participants were gathered in the auditorium, and the researcher provided them with the instructions in the presence of two of their teachers. In the second school, the experimenter administered the study in class, in the presence of the teacher. The researcher introduced the topic of the research as a study on the use of the Internet and its relationship with personality. Then the researcher guaranteed anonymity, that the results would be presented only in aggregated form, pointed out that it was important to answer in an honest way, that no correct response existed, and we were interested in their way of viewing things. Finally, participants were informed that participation was voluntary, and that they could withdraw their consent at any time during compilation.

Measures

Implicit self-esteem was assessed using the Name Letter Task (NLT; LeBel & Gawronski, 2009). The NLT has proven useful in previous research investigating discrepant self-esteem (e.g., Leon et al., 2023; Zogmaister & Maricuţoiu, 2022) and is based on the notion of implicit egotism, which is a spontaneous preference for things that are associated with the self and is usually related to self-esteem (Pelham & Mauritio, 2015). More specifically, the task is based on the idea that one's high self-esteem is manifested as preference for one's initials, as compared with the evaluations of all other letters in the alphabet (LeBel & Gawronski, 2009). Because the task does not require the respondent to declare their self-esteem, but this is rather inferred from the higher preference of their initials, this can be considered an indirect, or implicit, measure of self-esteem. All letters of the alphabet were presented in a fixed random order for an aesthetic judgment, on 10-point scales from 1 *(I do not like it at all*) to 10 (*I like it very much;* see Zogmaister & Maricuţoi, 2022, for the 10-point rating of the NLT). We computed NLT scores for the first letter of respondents' names, with the I-algorithm (LeBel & Gawronski, 2009) that corrects for differences in normative pleasantness of the letters and in baseline response tendencies in letter ratings. Higher scores indicated higher implicit self-esteem.

Explicit self-esteem was assessed using the popular Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; Italian translation and validation by Prezza et al., 1997). This questionnaire consists of five positively worded sentences (e.g., *On the whole, I am satisfied with myself*) and five negatively worded sentences (e.g., *At times I think I am no good at all*). Respondents evaluated each sentence on a 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*). The

reliability was reliability (α = .838). We computed explicit self-esteem as the summed score of the responses, after reverse scoring the negatively worded items. Higher scores indicated higher levels of explicit self-esteem.

Clarity of the self-concept was assessed using the Self Concept Clarity Scale (SCCS; Campbell et al., 1996). This questionnaire measures the extent to which respondents hold clearly and confidently defined self-beliefs, characterized by stability and internal consistency and has been previously used in the investigation of SNs use (Lin et al., 2021; Petre, 2021). It consists in 12 items, ten negatively worded (e.g., *My beliefs about myself often conflict with one another*) and two positively worded (e.g., *In general, I have a clear sense of who I am and what I am*). Participants evaluated each item on the same 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*) used for the RSES. The reliability was good (α = .836). We computed SCCS scores as the summed score of the responses, after reverse scoring the negatively worded items. Higher scores indicated higher levels of self-concept clarity.

Loneliness was assessed using the UCLA Loneliness Scale (LS, Russell, 1996; Italian translation by Chieco et al., 2009). This widely used questionnaire measures how lonely respondents describe their experience and has proven useful in various investigations on adolescents' use of social media and Internet related behaviours (e.g., Papapanou et al., 2023; Turhan Gürbüz et al., 2021). It consists in 11 negatively worded (lonely) and 9 positively worded (non-lonely) questions. Respondents indicate how often they feel in the way described by each question (e.g., *How often do you feel that you are 'in tune' with the people around you? How often do you feel that there is no one you can turn to?*). Participants answered on a 5-point scale (*never, rarely, sometimes, often, always*). To compute the Loneliness score, we attributed the values 1 to *never*, 2 to *rarely*, 3 to *sometimes*, 4 to *often*, and 5 to *always*. Next, we reverse-scored the positively worded items and computed a summed score. The reliability of this scale was excellent (α = .876). We computed Loneliness scores as the summed score of the responses, so that higher values indicate higher levels of loneliness.

Internet Use Scale. This questionnaire was created for the present research and consisted in a list of Internet activities (use of search engines, online newspaper reading, visiting Internet sites for information purposes, online gaming, discussion forums, streaming of movies and shows, visits to a list of social network sites, e.g., Facebook, Twitter). For each activity, respondents estimated how much time they spent on it per week, and how many times a week they performed the activity on average.

Problematic SNs use (PSNU) was assessed using a modified version of the Internet Addiction Test (Young, 1998; see Widyanto & McMurran, 2004). The Internet Addiction Test consists in 20 items, in which respondents are asked to rate items covering how their Internet use affects their daily life (e.g., *Do you find that you stay on-line longer than you intended? Do you neglect household chores to spend more time online?*). Based on the Internet Addiction Test, we developed 19 items describing self-reported behaviours symptomatic of social network addiction for an adolescent population. (e.g., *How often do you happen to say to yourself 'just a few more minutes' when you are connected to a social network; How often do you happen to say to yourself that time spent in social networks negatively affects your grades at school?*). Consistent with other scales used in this study, response options are *never*, *rarely*, *sometimes*, *often*, and *always* and, to compute the PSNU score, we attributed the values 1 to *never*, 2 to *rarely*, 3 to *sometimes*, 4 to *often*, and 5 to *always*. We conducted a Principal Component Analysis, which revealed the presence of two positively correlated components, r = .453. We interpreted the first component as 'Interference with other aspects of life' (hereafter: Interference PSNU), as it reflected items making reference to social network interfering with duties of daily life (e.g., *How often does it happen that you connect to social networks before doing other things that need to be done?*). The second component reflected items referring to sociality and emotional aspects (e.g., *How often does it happen that you prefer to spend your time in social networks rather than going out with real people?, How often does it happen that you enter social networks to distract your mind from annoying thoughts about your real life?*); therefore, we labelled it 'Social/emotional impact'. Both subscales had satisfactory levels of reliability (α = .744, and α = .878, respectively). Further details regarding this scale are presented in the supplemental material.

We computed a summed score, and higher values indicate higher levels of problematic social network use. Online Relations Preference Scale (ORPS). This scale was created for the present research to measure psychological investment in social networks and their usage in lieu of face-to-face relations. It consists of 12 questions (e.g., *How often do you happen to write on your page, or tell on the Internet, information about yourself that you would be embarrassed about telling somebody face to face?, How often do you happen to prefer social networks to outdoor activities with friends?, How often do you happen to use social networks to feel accepted by a group?*). Response options were the same as for the PSNU and we computed a summed score following the same procedure. Higher values indicated higher preference for online relations, and the reliability of the scores was good (α = .823)

Data Preparation

Sixteen participants failed to evaluate one or more letters in the NLT and two participants did not indicate the initial of their name. Following the indications of LeBel and Gawronski (2009), data from these participants were eliminated listwise as we could not compute their NLT score, leaving us with a sample of *N* = 158 participants.

As the PSNU is a new adaptation of the Internet Addiction Tests to SNs, and ORPS was created for the purposes of the present research, we initially tested the structure of these two scales with Principal Component Analysis (PCA). This analysis indicated that ORPS had a unidimensional structure, and two correlated components (*r* = .453) underlie responses to PSNU: Interference with everyday life and Socioemotional impact. Details regarding the PCAs can be found in Supplemental Materials. Next, we computed the summed score for each variable of interest, checked their internal consistency (see Table 1, main diagonal), and inspected the data distribution for outliers.

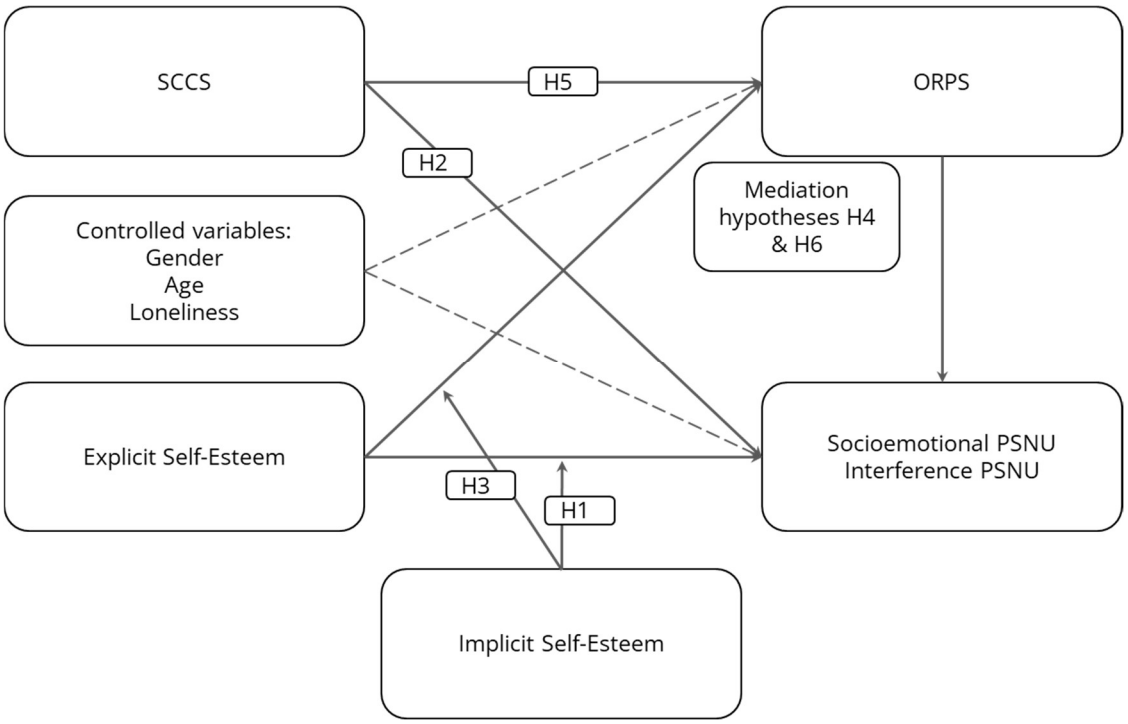
We used the 2 MAD rule to single out potential outliers: In other words, data points that were more distant than two Median Absolute Deviations from the median on a certain variable were considered as potential outliers and visually inspected. This visual inspection indicated that three observations had outlying values on NLT. Given the central role played by this variable, we discarded these three observations from the analysis, leaving us with a final sample of *N* = 155 participants. One further case had outlying value on the loneliness scale, one on Socioemotional PSNU, and two on the preference for online interactions; these cases were treated as missing pairwise and discarded only for the analyses in which the variable of interest was involved. All these cases were more distant than 5 MADs from the median.

As we conducted two parallel regression analyses on the two criteria, we applied Bonferroni correction and, therefore, we will use a significance level alpha = .025 in the regression analysis.

We checked whether the sample size of *N* = 158 was sufficient for this regression analysis through a sensitivity power analysis, that we conducted with G*Power (Faul et al. 2009). We conducted the sensitivity analysis for a regression model with 7 predictors (all of which tested for significance), with α = .05 and power (1 − β) = .08. It indicated that the test was sensitive enough for effects of size f^2 = .112, corresponding to R^2 = .10. This is considered a medium effect size in regression analysis. Therefore, we considered it appropriate for the present purposes.

Given the presence of two different indices of problematic SNs usage, we conducted two regression analyses, one for each of these indices. More specifically, hypotheses H1, H2, H5, and H6 were tested separately on the two indices and the predictors used in both analyses were the same. We used SPSS 25 and conducted the mediation analyses with the Process macro (Hayes, 2017). For the regression analyses, all continuous variables were standardized to make interpretation easier. Figure 1 depicts an overview of the hypotheses and analyses.

Figure 1. *Overview of the Hypotheses.*



Results

Preliminary Analyses

Table 1 presents the main descriptive statistics and the correlations between the variables. An inspection of the correlation matrix showed that the two indices of problematic SNs usage were significantly associated with self-concept clarity (thus supporting H2) and with the interaction term between the implicit and explicit self-esteem. In addition, low concept clarity was associated with the strong preference for online interaction (thus supporting H5). The measures of implicit and explicit self-esteem showed no significant correlation with either problematic SNs usage or preference for online interaction scores. Consistent with previous evidence indicating that direct measures of self-esteem, like the RSES, and indirect measures like the NLT capture distinct constructs (Zeigler-Hill & Jordan, 2010) the correlation between explicit and implicit self-esteem is non-significant and close to zero. It is also worth noting that preference for online interactions correlated positively with the two problematic SNs usage scores. Loneliness scores correlated positively with preference for online interactions but showed no significant correlations with problematic SNs usage.

Based on these significant relations between self-concept variables and Internet usage variables, and on our hypotheses regarding the interplay between implicit and explicit self-esteem, next we tested our hypotheses. In these analyses, we included three covariates (i.e., gender, age, and loneliness) to exclude them as explanatory alternatives for the effects identified in this research study.

Table 1. *Descriptive Statistics and Correlations Between Study Variables.*

	Descriptive statistics					Correlations							
	N	Min	Max	*M*	*SD*	1	2	3	4	5	6	7	8
1. socioemotional PSNU	154	8.00	26.00	13.052	3.922	*.744*							
2. interference PSNU	154	9.00	43.00	24.452	7.239	.468**	*.878*						
3. ORPS	153	12.00	38.00	20.412	5.535	.655**	.478**	*.823*					
4. LS	154	33.00	73.00	50.896	9.741	-.002	-.056	.161*	*.876*				
5. SCCS	155	6.00	58.00	28.923	11.501	-.316**	-.172*	-.355**	-.446**	*.836*			
6. RSES	155	17.00	62.00	41.806	8.552	-.061	-.086	-.142	-.493**	.555**	*.838*		
7. NLT	155	-1.69	6.29	2.769	1.626	.121	.119	.028	-.035	.030	.019	–	
8. RSES*NLT	155	-3.36	3.38	0,000	1.000	.203*	.243**	.290**	-.065	-.120	-.010	-.106	–

Note. $^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$; $^{\dagger}p < .10$ (2-tailed). For gender: 0 = *male*, 1 = *female*. Internal consistencies (Cronbach's Alpha) in Italics on the main diagonal of the correlation table. NLT = Name Letter Task; RSES = Rosenberg Self-Esteem Scale; SCCS = Self Concept Clarity Scale; LS = Loneliness Scale; PSNU = Problematic Social Network use; ORPS = Online Relations Preference Scale; zRSES*NLT = Standardized interaction term (explicit-implicit self-esteem).

Main Analyses

Our main analyses involved a regression model that predicted the preference for online interactions, followed by two regression models that predicted the two forms of problematic SNs usage. To ease the interpretation of our results, we used the standardized z-scores of our predictors and the interaction between implicit and explicit self-esteem was estimated by computing the product of the two standardized scores. The computation of the product of the standardized scores is a frequently used approach for studying moderation effects using multivariate regression analyses (Hayes, 2017). The results of these analyses are summarized in Table 2.

We used Model 8 of Process to investigate whether levels of problematic SNs usage can be found in the case of users with inconsistent self-esteem (H1) and whether this relationship is mediated by the preference for online interactions (H4). We conducted two different analyses, to test the mediation of the preference for online interactions on the moderation effect for each dimension of the problematic SNs use (i.e., interference and socio-emotional), while controlling for age, gender, loneliness, and self-concept clarity. These analyses indicated that the relationship between self-esteem inconsistencies and the two indices of PSNU was completely mediated by the preference for online interactions. The conditional direct effect of explicit self-esteem with the two forms of problematic SNs use was not statistically significant, while the conditional indirect effect (i.e., mediated by the preference for online interactions) was statistically significant. However, the mediated moderation analyses presented in Table 3 did not support H1: we found that both forms of problematic SNs use were positively

associated with explicit self-esteem only in the case of high implicit self-esteem. Therefore, the participants with convergent high self-esteem reported higher levels of problematic SNs usage, as compared with participants with discrepant high self-esteem. Consequently, although we found a significant mediating effect, the direction of this effect was opposed to our H4.

Table 2. *Regression Analyses to Test the Effect of Self-Esteem Discrepancies (Hypotheses H1 and H3), and of Self-Concept Clarity.*

	ORPS (R^2 = .186)			Interference PSNU (R^2 = .320)			Socio-emotional PSNU (R^2 = .470)		
	β	*SE*	*p*	β	*SE*	*p*	β	*SE*	*p*
Gender	.052	.181	.720	−.212	.168	.148	−.006	.145	.959
Age	−.030	.074	.615	−.046	.069	.417	−.122	.060	.034
LS	.064	.088	.379	−.199	.082	.015	−.162	.071	.021
SCCS	−.310	.092	.002	−.042	.089	.560	−.189	.076	.014
NLT	.030	.078	.633	.171	.072	.017	.089	.062	.107
RSES	.041	.095	.593	−.074	.089	.319	.058	.076	.357
RSES*NLT	.225	.073	.004	.070	.070	.238	.010	.060	.835
ORPS	–	–		.493	.077	<.001	.593	.067	<.001

Note. LS = Loneliness Scale; SCCS = Self Concept Clarity Scale; NLT = Name Letter Task; RSES = Rosenberg Self-Esteem Scale; zRSES*NLT = Standardized interaction term (explicit-implicit self-esteem); PSNU = Problematic Social Network use; ORPS = Online Relations Preference Scale.

Next, we used Model 1 of Process to investigate how the interaction between implicit and explicit self-esteem is associated with the preference for online interaction, β = .225, *SE* = .073, 95% CI [.081, .370]. We expected that higher inconsistencies in self-esteem would be associated with a preference for online interactions (H3). Using the Johnson-Neyman analysis, we found that explicit self-esteem is positively associated with the preference for online interactions only if the implicit self-esteem is high (i.e., 0.78 *SD* above the mean), while the same relationship is negative when the implicit self-esteem is low (i.e., 1.44 *SD* below the mean). This overall pattern of results did not support H3, as it indicated that the preference for online interactions was higher when participants displayed more consistent SE: For participants with low implicit self-esteem scores, the preference for online interactions increases as explicit self-esteem decreases. Therefore, individuals with scores indicating fragile high self-esteem (i.e., high explicit and low implicit self-esteem) expressed less preference for online interactions, as compared with individuals with convergent low self-esteem. In the case of high implicit self-esteem, the preference for online interactions decreases as explicit self-esteem increases. Therefore, the preference for online interactions increased in the case of respondents with convergent high self-esteem (i.e., high explicit and high implicit self-esteem), and decreased in the case of respondents with fragile high self-esteem (i.e., low explicit and high implicit self-esteem). On the other hand, we found that self-concept clarity significantly predicted the preference for online interaction, β = −.310, *SE* = .092, 95% CI = [−.491, −.128], and that higher SCCS scores were associated with lower POSI, thus supporting H5.

Table 3. *Relationship Between Explicit Self-Esteem and Problematic SNs Use. Results of the Moderated Mediation Analysis.*

	Interference PSNU				Socio-emotional PSNU			
	B	*SE*	*p*	95% C.I.	*B*	*SE*	*p*	95% C.I.
Direct effect (RSES->PSNU)								
Low NLT	−.140	.111	.149	[−.340; .080]	.068	.096	.390	[−.122; .258]
High NLT	−.005	.111	.955	[−.226; .215]	.048	.096	.538	[−.142; .238]
Indirect effect (RSES->OPRS->PSNU)								
Low NLT	−.085	.061	.116	[−.207; .039]	−.103	.075	.121	[−.247; .051]
High NLT	.129	.057	.021	[.028; .252]	.155	.066	.018	[.039; .296]

Note. RSES = Rosenberg self-esteem scale; NLT = name-letter test; PSNU = problematic social networks use questionnaire.

As concerns H5, namely that self-concept clarity would be negatively related to preference for online interactions, the zero-order correlation supported the hypothesis (Table 1), indicating a significant negative correlation of moderate size. Finally, we used Model 4 of Process to test whether the preference for online interactions mediated the relationship between self-concept clarity and the two forms of problematic SNs usage, while controlling for all

other variables (i.e., age, gender, loneliness, implicit and explicit self-esteem, and their interaction). The results presented in Table 4 supported the existence of a mediated effect, as anticipated by H6.

Table 4. *Results of the Self-Concept Mediation Analysis.*

	Interference PSNU				Socio-emotional PSNU			
	B	*SE*	*p*	95% CI	*B*	*SE*	*p*	95% CI
Direct effect (SCCS->PSNU)	−.042	.089	.560	[−.217; .133]	−.189	.077	.015	[−.341; −.038]
Indirect effect (SCCS-> OPRS->PSNU)	−.153	.055	.008	[−.275; −.057]	−.184	.069	.010	[−.339; −.068]
Total effect	−.195	.096	.034	[−.385; −.004]	−.373	.091	.001	[−.554; −.192]

Note. SCCS = self-concept clarity scale; PSNU = problematic social networks use questionnaire.

Discussion

In the present study we investigated the relationships between problematic social networks use and self-concept variables. Based on previous research, we expected that problematic SNs usage was associated with fragility in the self-concept. We investigated this prediction considering two distinct aspects of fragility: discrepancies between implicit and explicit self-esteem and low self-clarity. Based on previous evidence (Israelashvili et al., 2012; Quinones & Kakabadse, 2015), we expected that these relationships were mediated by one's preference for online interactions, while controlling for self-reported loneliness. Unlike previous studies that analysed these self-concept variables separately, we build our predictive models while simultaneously controlling these variables. In addition, we also controlled for loneliness and demographic variables (i.e., gender and age). This allowed us to investigate the contribution of each self-concept variable, in addition to other variables that are already used in the literature.

Although we initially hypothesised that problematic SNs use is characteristic of adolescents with inconsistent self-esteem (H1), our results suggested that problematic SNs usage is higher in the case of teenagers with secure high self-esteem (high implicit and high explicit self-esteem). Furthermore, this relationship between explicit self-esteem and problematic SNs use was significantly mediated by the preference for online interactions only in the case of high implicit self-esteem, not in the case of low implicit self-esteem. Previous research studies have suggested that SNs are useful for validating one's own sense of self-worth (Liu & Baumeister, 2016). Therefore, one might expect that it is particularly those individuals with insecure self-esteem who make use of social networks as a tool to collect positive feedback and reinforce their sense of self-worth. Therefore, finding high levels of problematic SNs usage only in teenagers with secure self-esteem is surprising because it suggested that they selectively use only the positive online information (as suggested by Liu and Baumeister, 2016) and can disregard potential negative information, which is also present in online interactions This result also suggests that the mediator role of the preference for online interactions is relevant only in the case of users with high implicit self-esteem, thus implying that different mechanisms can be inferred in the case of users with low implicit self-esteem.

In our view, the insignificant relationship present in the case of teenagers with low implicit self-esteem can be explained by how these users react to the negative self-relevant information that can be present in the online interactions. Although the literature on the relationship between self-esteem and SNs usage focused on positive self-related information, negative self-relevant information is also present in online interactions. For example, there are instances when we may not receive as many "likes" as anticipated, lack sufficient followers or "friends", have our requests for friendship go unanswered, receive negative comments on our posts, or have our posts simply ignored. Furthermore, reports of cyberbullying incidence indicated that cyberbullying rates have increased over the years, reaching up to 20-25% among adolescent users (Kessel Schneider et al., 2015; O'Neill & Dinh, 2015). This means that even if individuals approach the SNs to receive reinforcing reactions, at times they will be disappointed and, importantly, the way in which the positive and negative social feedback is processed is associated with one's self views.

Although surprising, we interpreted this result by appealing to existing evidence regarding how negative self-relevant information is processed by individuals with secure self-esteem and by individuals with insecure self-esteem. Secure self-esteem is associated with confidence of self-worth and with self-esteem stability in the face of negative self-relevant information (Borton et al., 2017). Individuals with secure self-esteem show less attention to social rejection, while individuals with defensive self-esteem have higher levels of rejection sensitivity (Borton et al., 2017). This may be relevant because SNs users are faced with both accepting and rejecting information, and individuals with defensive self-esteem are expected to give more weight to the negative (or rejecting) feedbacks

(Stucke & Spoorer, 2002) and spend less time reading negative social feedback (Schröder-Abé et al., 2007). Consequently, SNs users with secure self-esteem might end up with a more positive emotional reaction and satisfying experience with the online interactions, while this experience might be less satisfying for individuals with fragile self-esteem. Therefore, the unfavourable information to which fragile self-esteem individuals are taught to give disproportionate attention could decrease their tendency to use social networks in their search for self-confirmations.

In sum, individuals with secure self-esteem might approach SNs with confidence, expecting positive feedback, and they would not react particularly negatively to the negative feedback (e.g., absence of likes, negative comments to their posts, absence of reactions to their contents, low number of followers). On the other hand, individuals with fragile self-esteem might be particularly sensitive to such negative feedback, which would disproportionately capture their attention (Borton et al., 2017). Consequently, teenagers with fragile self-esteem would likely avoid SNs after encountering such negative feedback. To gain a better perspective on these intricate relationships, future studies should include not only data regarding the frequency of SNs usage, but also data regarding how SNs respond to users' needs. For example, Vezzoli and colleagues (2021) used the Uses and Gratification Theory (Blumler & Katz, 1974) to conclude that the problematic use of smartphones is related to certain needs (e.g., status needs, pastime needs) more than to others. In the case of problematic SNs use, it is possible that users with secure self-esteem find different gratifications in SNs usage, as compared with users with fragile self-esteem. Consequently, maybe SNs are better at gratifying the needs of users with secure self-esteem, than the needs of users with fragile self-esteem.

In another hypothesis, we anticipated the negative relationship between self-concept clarity and problematic SNs usage (H2). Our results supported the idea that the SNs are preferred by individuals with low self-concept clarity, and this finding is convergent with the results of previous studies (Israelashvili et al., 2012; Quinones & Kakabadse, 2015). As a possible explanation for this relationship, Israelashvili and colleagues (2012) argued that teenagers with low self-concept clarity prefer the online environment because it allows for the selective presentation of self-relevant information. Being selective regarding the information presented over the Internet allows for the presentation of an apparently coherent image of the self, therefore frequent SNs usage might be beneficial for users with low self-concept clarity (Israelashvili et al., 2012). In addition to the selective presentation of self-relevant information, the SNs can also be useful to find information that can be self-clarifying because it allows for social comparisons. As social comparisons represent an important source for clarifying one's self-concept during adolescence (Lodi-Smith & Crocetti, 2017), it is not surprising that teenagers with low self-concept clarity are spending more time on SNs.

At a first glance it seems contradictory that problematic SNs use can be found in the case of teenagers with secured self-esteem and unclear self-concept, as these two self-concept variables seem opposite. However, we argue that the difference resides in how each self-concept variable is defined. Secured self-esteem defines the convergence between explicit and implicit evaluations of the self (i.e., what I'm worth), while self-concept clarity is more related to the cognitive consistency of the self-knowledge (i.e., it is un/clear to me who I am). These two perspectives have different roles when it comes to processing self-relevant information. On the one hand, discrepancies in self-esteem are important for evaluating the affective valence of the new information (e.g., is it threatening for my self-evaluation, or not?), while self-esteem clarity could be important for assessing the utility value of the new information (e.g., is the new information useful for clarifying my self-concept?). Hence, the secure self-esteem will generally help teenagers perceive new information from SNs as less threatening for their self-worth, while the self-concept unclarities will generally assess each new information as being relevant for their self-knowledge. In the present research study, we tested whether the preference for online interactions is a potential mediator for the relationship between self-concept variables and problematic SNs usage (H4 and H6). We found that preference for online interactions mediated both relationships between self-concept variables (i.e., self-concept clarity, explicit self-esteem) and problematic SNs use. The mediation effect was partial in the case of self-concept clarity, while the relationship between explicit self-esteem and problematic SNs use was fully mediated by the preference for online interactions only when implicit self-esteem was high. To understand the relationship between the self-concept variables and the preference for online interactions, we argue that low Self Concept Clarity might increase the attraction to online social interactions, as these interactions allow one to experiment more with the self and self-presentation (Quinones & Kakabadse, 2015). As we discussed above, adolescents with secure self-esteem are less reactive to possible negative self-relevant information they might encounter during online activities. This could also explain why these users also have a stronger preference for online interactions, as compared with adolescents with fragile self-esteem. Because SNs were developed to facilitate human interactions, the

relationship between the preference for online interactions and high levels of problematic SNs use is not surprising. However, it is interesting that the mediation effect discussed here is strong enough to account for most of the relationship between our self-concept variables and problematic SNs use (i.e., we found mostly full mediation effects). This suggests that the preference for online interactions could be considered as an important mechanism for future interventions aimed at reducing SNs usage in adolescents.

Limitations

There are two limitations that should be considered. Firstly, the cross-sectional nature of our data does not allow for causal inferences. Therefore, further longitudinal research studies are needed to investigate the causal nature of our findings. Using a panel design, future studies could check the temporal order assumed in the present study or could investigate whether changes in self-concept clarity are associated with changes in problematic SNs use. Secondly, although we used the NLT for assessing implicit self-esteem, this is not the only alternative to measuring implicit self-worth. Although some previous studies (e.g., Maroiu et al., 2016) reported convergent findings using the NLT and the Implicit Association Test for measuring implicit self-esteem, these two measures are relatively independent (Krause et al., 2010). Therefore, future research should investigate whether the results remain stable when different measures are used. Thirdly, another limitation could be the fact that our sample was unbalanced for gender. As previous research showed, females give and receive greater social support on SNs as compared to men (Tifferet, 2020), is it possible that these gender differences could have influenced our findings. Finally, we tested our hypotheses on teenagers, therefore the generalizability of our findings should be limited to this age group. There are two main reasons for which our findings should not be extended to adult population: i) as compared with the adult population, teenagers are more likely to develop problematic SNs use (Lenhart et al., 2015), and ii) as an age group, adolescents are in a developmental stage in which they need to clarify their self-concept (Lodi-Smith & Crocetti, 2017).

Implications for Theory and Practice

The findings of the present study have both theoretical and practical implications. From a theoretical perspective, the different pattern of results between inconsistent self-esteem and self-concept clarity suggests that these two concepts are very different and should be treated with caution when it comes to using them as indicators of fragile self-views. While self-concept clarity might be more related to the cognitive aspects of self-knowledge (i.e., "who I am"), self-esteem consistency might be more related to the affective aspects of self-concept (i.e., "what I'm worth"). Consequently, the low self-concept clarity (i.e., the cognitive aspect) might drive individuals to seek information about who they are on SNs, while the self-esteem inconsistency (i.e., the affective aspect) might be related to how individuals use the information gathered on SNs. This finding is particularly important for educational psychologists, as it is suggested that only teenagers with secure self-esteem are using SNs to clarify their self-concept. This is encouraging because it reveals that teenagers with fragile self-esteem are less likely to frequently engage in using SNs. Furthermore, teenage therapists could be aware that the preference for online interactions is a potential mediators of the relationships between self-concept variables and problematic SNs use. They could work with their clients towards developing interaction skills that do not rely on the virtual environment.

Conclusions

SNs are becoming the "normal" way of interacting (Valkenburg & Peter, 2011) because i) adolescents use online social interactions more frequently compared to the adult population, and ii) this age group prefers online communication even for the social interactions with their peers that could easily be achieved through face-to-face interactions. However, our results showed that the relationship between self-esteem, self-concept, and the use of the SNs is a complex issue. Adolescents are attracted to SNs, which can provide them with positive tools for the important developmental goal of constructing their identity. Through SNs, adolescents can socialize, experiment with their self and identity, and receive positive feedback from their friends. However, these same SNs can also provide ego-threatening feedback, sometimes in a blatant way (e.g., through negative comments) and sometimes a more subtly (e.g., absence of likes or other interactions and feelings of social exclusion). Our results suggest that SNs are more attractive for some adolescents than others, and the present research provides useful insights into the characteristics of the self-concept that make adolescents more or less susceptible to their allure.

Footnotes

[1] The percentages do not add to 100% because a few participants indicated more than one place in response to the question.

Conflict of Interest

The authors have no conflict of interest to declare.

Authors' Contribution

Laurenţiu Paul Maricuţoiu: data curation, formal analysis, project administration, software, and writing—original draft, review and editing). **Cristina Zogmaister:** conceptualization, investigation, methodology, project administration, resources, software, supervision, and writing—review and editing.

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