

Follow or be followed: Exploring the links between Instagram popularity, social media addiction, cyber victimization, and subjective happiness in Italian adolescents



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ABSTRACT

Introduction: The aim of the study is to investigate the association between Instagram popularity and subjective happiness, and to test the mediating roles of cyber victimization and social media addiction.

Methods: We recruited a sample of middle school students (N = 345; 49% males, age M: 13.31 years; SD = 1.42; range = 11–16) who reported having an active Instagram account. We collected the following data: socio-demographic data, Instagram activity indicators and followers/following counts, perceived social media addiction, cyber victimization, and subjective happiness.

Results: Adolescents' followers count showed a negative indirect effect on subjective happiness via an increase in social media addiction and exposure to cyber victimization. In contrast, the following counts of adolescents show a positive indirect effect on subjective happiness via a decrease in social media addiction and exposure to cyber victimization.

Conclusions: Findings seem to indicate that as adolescents become more popular on Instagram (i.e., as their followers count increases), it also increases the risk that they might develop a behavior addiction to Instagram use, and experience cyber aggressions, which in turn may have a negative impact on their psychological well-being. Instead, adolescents whose activity on Instagram is more passive, and less dominated by digital status seeking behaviors, may be less exposed to these negative consequences. Limits and future directions are discussed.

1. Introduction

The use of smartphones and social media apps is widespread in adolescence: 89% of US adolescents aged 13–17 years old own a smartphone, and 70% check their social media accounts multiple times per day (Common Sense Media, 2018). Social media provide several benefits to adolescents. It allows them to maintain their current friendships and form new ones. It allows teenagers to find and exchange information of various kinds, including health-related information. In addition, social media allows teenagers spaces to express and share their creativity. More generally, in this virtual space teenagers can explore and shape their identity and modify their self-presentation based on feedback and reaction received from peers. Among social media apps, highly visual social media platforms, such as Instagram and Snapchat, have gradually outgrown Facebook in popularity among

teenagers (Anderson & Jiang, 2018; in Italy, Marengo, Longobardi, Fabris, & Settanni, 2018); Instagram, in particular, is now the most used social media app by US teenagers (Piper Jaffray, 2019). Created in 2010, Instagram provides users with the ability to share photos and videos on a personal profile “wall”, as well as to post temporary visual messages, also called “stories”. Wall posts and temporary messages are visible to the user's followers (i.e., Instagram users who have subscribed to the user's profile updates) who, in turn, can view, like, comment on, and share any content posted by the user. Two indicators provide information on the standing of the user among the Instagram community: (1) the number of Instagram followers obtained by the user (i.e., the Instagram follower count) and (2) the number of other Instagram users the user has subscribed to (i.e., the Instagram “following” count). Although both these indicators are expected to reflect individual differences in overall size of the user's social network, the followers count

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provide a specific indication of the level of the user's popularity among other Instagram users (Nesi & Prinstein, 2019). Highly popular Instagram users (i.e., "influencers") typically have a large followers/following ratio, with higher values indicating higher popularity (Woodruff, Santarossa, & Lacasse, 2018).

The massive popularity of social media platforms among adolescents has attracted the interest of scholars and policymakers, fostering research aimed at establishing their influence on users' risk behaviors and well-being. In particular, a large recent survey conducted in the UK (Royal Society for Public Health (2017) (2017), 2017) identified Instagram as the most harmful among existing social media platforms in terms of its consequence for adolescents' well-being. Results from the survey highlighted potential associations between Instagram use and heightened risk of mental health problems, including depression and anxiety, as well as sleep disturbance, body image concerns, and exposure to cyberbullying victimization. The negative impact of Instagram use on adolescents' mental health is supported by recent studies conducted in other cultural contexts, including the US (Mackson, Brochu, & Schneider, 2019), Belgium (Frison & Eggermont, 2017), Italy (Marengo et al., 2018), and Turkey (Yurdagül, Kircaburun, Emirtekin, Wang, & Griffiths, 2019), as well as cross-cultural samples (Lup, Trub, & Rosenthal, 2015). With regard to cyber-victimization, there are no studies in Italy on the prevalence of it specifically connected to Instagram; however, some data report that in adolescents the prevalence of cyber-victimization ranges between 11% and 26% (Baldry, Sorrentino, & Farrington, 2019; Vieno et al., 2015).

For adolescents, the sense of belonging to a group and social self-esteem are important aspects for their psychological well-being and social functioning. Social media use appears to fulfill these needs (Sheldon & Bryant, 2016). Some evidence suggests that those who have a stronger sense of belonging and more positive relationships with their peers show lower social media use (Badenes-Ribera, Fabris, Gastaldi, Prino, & Longobardi, 2019), whereas those with a greater feeling of loneliness and social isolation tend to use it more frequently (Pittman, 2015). In line with social compensation theory (Valkenburg, Peter, & Schouten, 2006), adolescents may look at the online environment as a context in which they can extend their network of contacts, increase their popularity, and affirm their status among peers. Some authors (Nesi, Choukas-Bradley, & Prinstein, 2018) have used the expression "digital status seeking" or "feedback seeking" to indicate a set of behaviors aimed at improving social media-based indicators for peer status, such as the number of "likes", comments, or, in the case of Instagram, followers. Recent literature shows that these specific aspects of the SNS experience (i.e., receiving likes, comments, and followers) may activate the reward system (e.g., Meshi, Morawetz, & Heekeren, 2013; Montag et al., 2017), and potentially lead to development of addictive social media behaviors (Marengo, Poletti, & Settanni, 2020). During adolescence, executive functions improve, as a result of pruning and myelination in the frontal and parietal lobes. In this period, the adolescent brain is characterized by the heightened sensitivity of areas involved in affect and reward processing (Luciana, 2013). The reward system is also activated following social stimuli, such as positive social feedback (example: "likes" on Instagram). Positive social feedback has been linked to the intensity of social media use (Sherman, Greenfield, Hernandez, & Dapretto, 2018).

Indeed, the literature has long shown that the use of social media can induce typical behaviors relating to behavioral dependence (Andreassen, 2015), which is characterized by the six specific components of salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse (Griffiths, 2005). In particular, studies seem to indicate that younger people and females are the two groups most at risk of developing social media addiction, although not all studies agree (Andreassen, 2015; Kuss & Griffiths, 2011). In turn, as regards specifically Instagram, addictive social media use has been shown to be associated with depressive symptoms, loneliness, anxiety, negative moods, low self-esteem, and dissatisfaction with one's appearance

(Brown & Tiggemann, 2016; Kuss & Griffiths, 2011; Lup et al., 2015; Marengo et al., 2018; Sherlock & Wagstaff, 2018), all of which are factors that contribute to a reduction in the subjective well-being (Grant et al., 2003).

Engaging in "feedback seeking" and "digital status seeking" behaviors on SNS may also have negative consequences on adolescents' psychological well-being due to an increased risk of cyber victimization. Cyber victimization refers to "any behavior performed through electronic or digital media by individuals or groups that repeatedly communicate hostile or aggressive messages intended to inflict harm or discomfort on others" (Tokunaga, 2010, p. 278). Cyber victimization includes direct forms (such as sending insulting messages) or indirect attacks (such as spreading fake news or excluding others from the group of peers online). In Europe, it is estimated that between 20% and 40% of adolescents have experienced some form of cyber victimization (Tokunaga, 2010), with females and older adolescents seeming to be most at risk (Tsitsika et al., 2015). Literature indicates that adolescents who use the Internet most frequently, and SNS in particular, are at greater risk of being cyber-victimized when compared with peers reporting lower online activity (Juvonen & Gross, 2008; Marengo, Settanni, & Longobardi, 2019; Navarro & Jasinski, 2012; Staksrud, Ólafsson, & Livingstone, 2013). In the contexts of SNS, the need for online popularity may act as factor in increasing the risk of cyber victimization: adolescents may be inclined to accept individuals that they do not know as online "friends" in order to increase the size of their online social networks, which in turn may increase their chance of interacting with hostile peers, and strangers (e.g., Reyns, Henson, & Fisher, 2011). Further, there exist evidences indicating that in the online context, popularity might represent a risk factor for cyber victimization by itself (Ranney & Troop-Gordon, 2020). In fact, popular teenagers are not necessarily those most accepted by peers, but popularity refers to forms of social status reflecting impact, visibility, and social dominance among peers. Peer popularity has advantages in the short and long terms, and adolescents tend to maintain their high position in the group using both prosocial and aggressive strategies (Closson, 2009; Ranney & Troop-Gordon, 2020). The latter can increase situations of conflict and victimization. Furthermore, the literature highlights how high-in-popularity subjects tend to be more exposed to the risk of victimization, both by other popular peers and rivals and by low-in-popularity youths, with the latter wanting to demonstrate power and influence, which has a tendency to increase their social standing (Ranney & Troop-Gordon, 2020). These dynamics do not only occur in face-to-face interactions but also in the online world where everything is more amplified (Barlett & Gentile, 2012; Ranney & Troop-Gordon, 2020). Indeed, adolescents seeking to undermine the social status of popular adolescents might resort to cyber bullying behaviors, which may ultimately be more damaging for the reputation of the victims than face-to-face attacks, and can be pursued in anonymity by the perpetrators (Barlett & Gentile, 2012). Ultimately, exposure to cyber victimization can lead to a decrease in psychological well-being of the individuals involved, as it is associated with internalizing and externalizing symptoms, as well as academic problems (Fisher, Gardella, & Teurbe-Tolon, 2016; Nakamoto & Schwartz, 2010; Tsitsika et al., 2015).

2. Aims of the study

Although there exists a vast literature investigating link between adolescents' activity on SNS and psychological well-being, research investigating the impact of adolescents' experience on Instagram is scant. This is especially troubling given the ever increasing popularity of this specific platform among adolescents. In this study, we investigate the association between adolescent Instagram users' social network size, assessed via Instagram following and follower counts, and users' exposure to cyber victimization, social media addiction, and subjective happiness. Based on consideration concerning the link

between the sense of belonging and emotional wellbeing in adolescence, we hypothesize a direct positive link might emerge between their social network size on Instagram, as operationalized by follower and following metrics, and adolescents' perceived subjective happiness. At the same time, driven by previous findings highlighting links between popularity on social media as factor in excessive platform use and exposure aggressive behaviors by online peers, we hypothesize that adolescent reporting larger social network size might show a higher prevalence of addictive behaviors and exposure to online victimization events. Because of the known associations between emotional distress, addictive behaviors and online victimization, we hypothesize that both cyber victimization and social media addiction may act as negative mediators of the link between Instagram social network size and subjective happiness. However, because Instagram follower and following counts reflect distinct aspects of users' interaction with the Instagram social network, we expect these two metrics to show the different pattern of associations with other investigated constructs. In particular, because of its stronger conceptual overlap with social media popularity, we expect that adolescents' Instagram follower count might show stronger links with the other investigated constructs than the Instagram following count metric.

3. Method

3.1. Participants and procedure

The initial sample consisted of 506 adolescent students attending 5 secondary schools located in Northern Italy. School principals and teachers provided authorization for the participation of each class taking part in the study. Prior to data collection, student consent for participation, as well as parental consent, was obtained. Participants were assured of data confidentiality and informed that participation in the study was voluntary. In other words, they could refuse to participate and withdraw from the study at any time. Participants were also informed of the nature and objectives of the study, in compliance with the ethical code of the Italian Association for Psychology (AIP). The research was approved by the university institutional review board (# 182567).

Students' and parents' (signed) informed consent was obtained for 81% of students, resulting in 425 participating students. Data were collected in classrooms during school hours using anonymous paper and pencil questionnaires. Based on survey responses, we found that 76.8% of the students had an active Instagram account, while 23.2% of participants never used Instagram. Because the present study focused on Instagram users, the 72 students who reported not using Instagram were not included in the analyses. Hence, the final sample consisted of 345 middle school students (49% males, with a mean age of 13.31 years; SD = 1.42; range = 11–16) who reported having an active Instagram account.

3.2. Instruments

3.2.1. Smartphone and Instagram use

The questionnaire included a section that collected information about technology use. First, we collected information about the number of hours they spent using their smartphones on a typical day using a 7-point rating scale, ranging from 1 = "Less than 1 h" to 7 = "7 h or more." Next, we collected information about students' use of Instagram during the last 12 months. First, students were asked to rate their frequency of Instagram use using the following scale: (1) I never use Instagram, (2) I use it once a month, (3) I often use Instagram (at least once a week), and (4) I use Instagram every day. Next, we asked students to report their current Instagram follower and following counts. Responses were collected using a 9-point response scale including the following response categories: (1) "0–5" to (9) "Over 1000." For the purpose of correlation and regression analyses, the frequency of

Instagram use was coded as a dichotomous variable indicating 1 = "Daily Instagram use" and 0 = "Less use," while the time spent on a smartphone and the Instagram follower and following variables were treated as continuous variables.

3.2.2. Subjective happiness

Students' happiness was assessed by administering the Italian adaptation of the Subjective Happiness Scale (SHS; Iani, Lauriola, Layous, & Sirigatti, 2014; Lyubomirsky & Lepper, 1999). The SHS is a four-item measure of global subjective happiness. For the first two items, participants rated how happy a person they are in both absolute terms and relative to their peers on a scale from 1 (not a very happy person) to 7 (a very happy person). For the remaining two items, they rated to what extent statements characterizing happy and unhappy individuals described them, using a seven-point response scale (1 = not at all; 7 = a great deal). One item was reverse scored and all the items were summed and averaged to provide a composite score for subjective happiness. Cronbach's alpha in this sample was 0.78.

3.2.3. Addictive social media use

We administered the Italian Bergen Social Media Addiction Scale (BSMAS; Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Monacis, de Palo, Griffiths, & Sinatra, 2017). The BSMAS includes six items assessing six components of addictive social media use: salience, tolerance, mood modification, relapse, withdrawal symptoms, and conflict. The items were rated on a 5-point scale (1 = very rarely, 5 = very often). Cronbach's alpha was 0.70.

3.2.4. Cyber victimization

We used the cyber victimization subscale from the questionnaire by Pozzoli and Gini (2019), which investigates involvement in different cyberbullying roles (i.e., cyber victimization, cyberbullying, passive cyber-bystanding, and cyber-defending). We administered the following items: (1) "Someone created an online group in which people made fun of me," (2) "I was excluded from an online group without reason, only to make me feel bad," (3) "Some of my embarrassing pictures or images were spread without my permission," and (4) "I was threatened or insulted via phone or the Internet." Students rated the frequency of exposure to each cyber victimization event using a 5-point rating scale ranging from "Never" (1) to "Several times a week" (5). Cronbach's alpha for the scale was 0.73.

3.3. Analysis strategy

Before running analyses we looked for missing responses in our dataset. We detected $n = 22$ missing values, amounting to 0.2% of the total item-level responses. In order to generate total scores for measures including missing values, we followed a two-step procedure. First, we checked if missing values complied with the Missing Completely at Random (MCAR) assumption using Little's MCAR test, which turned out to be non significant ($\chi^2(163) = 177.66, p = .20$). Because the missing responses complied with the MCAR assumption and the amount of missing data was limited, regression-based imputation was performed on missing values.

As a first analytical step, we computed descriptive statistics on the study measures. As regards indicators of technology use, namely, time spent on a smartphone, daily Instagram use, and the number of Instagram followers and following, we computed absolute frequencies per response category. Concerning gender, we reported the percentage of male participants. We computed the mean, standard deviation, and minimum and maximum observed values for the following continuous variables: age, addictive social media use, cyber victimization, and subjective happiness.

Then, we explored bivariate associations between the study variables. Because of the potential non-normality of many variables, we computed non-parametric correlations using Spearman's rank order

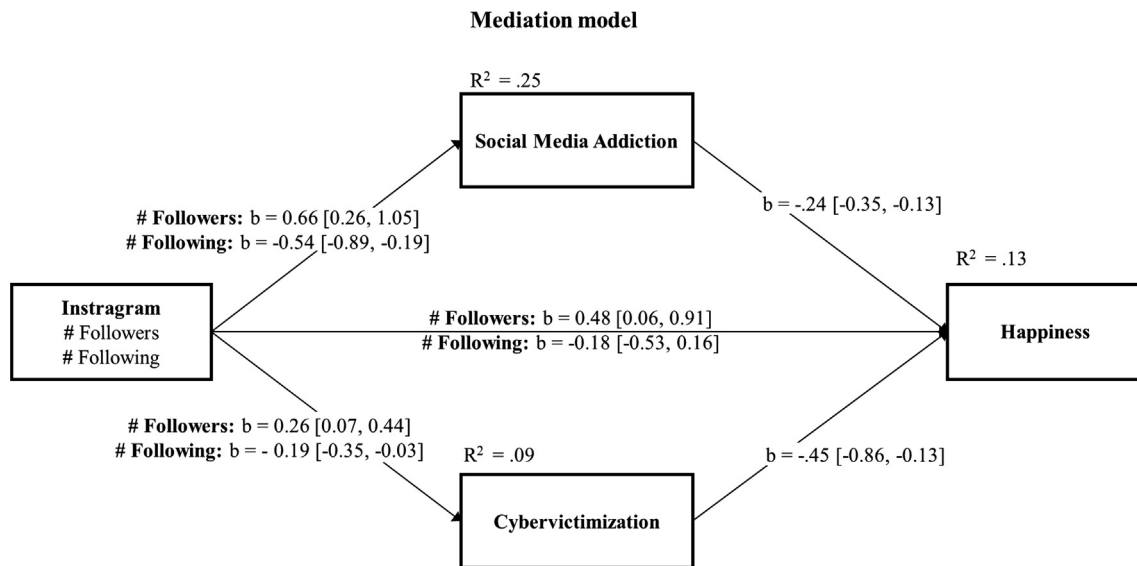


Fig. 1. Mediation model: estimated regression paths and 95% (bootstrap) confidence intervals for main effects (N = 345).

correlation coefficient.

Next, we explored the impact of participants' numbers of Instagram followers and following as predictors of their self-reported addictive social media use, exposure to cyber victimization, and subjective happiness. As a secondary aim, we tested the role of adolescents' self-reported addictive social media use and cyber victimization involvement and, as mediators of the associations between adolescents' number of Instagram following and followers, their self-reported subjective happiness. Analyses were performed with Preacher and Hayes's Process macro for SPSS. Specifically, mediation effects were tested using a multiple mediation modeling approach via multiple linear regression, which allowed for the conjoint investigation of the mediating effects of addictive social media use and cyber victimization. Fig. 1 shows the diagram for the tested regression paths. In all regression analyses, we control for the effects of gender, age, time spent online, and daily Instagram use. Total, direct, and indirect effects and their relative 95% confidence intervals were estimated using bias-corrected non-parametric bootstrapping techniques with 10,000 bootstrap samples (Preacher & Hayes, 2004). Effects were considered statistically significant if estimated 95% confidence intervals did not include zero. Regression analyses were performed using a bootstrap approach because it does not impose distributional assumptions on the residuals, hence allowing for inference even if the errors do not follow a normal distribution or constant error variance (Preacher & Hayes, 2008). Analyses were performed using SPSS version 23.

4. Results

The results of descriptive statistics computed on study measures are reported in Table 1. As regards time spent using a smartphone, 111 participants (32%) reported spending 2 h or less using their smartphone on a typical day, while 190 (55%) reported using a smartphone for 3–6 h per day, and 44 (13%) reported using their smartphone for 7 h or more per day.

As regards Instagram use, 240 of 345 (69%) participants reported using Instagram on a daily basis, while 31% reported seldom-to-frequent use. Concerning participants' Instagram following and follower counts, 75 (22%) and 87 (25%) reported following and followers count ranging from 0 to 100, respectively. In turn, 167 (48%) and 181 (53%) reported respectively following and followers counts ranging from 101 to 500. Finally, 103 (30%) and 77 (22%) reported having Instagram following and follower counts that were greater than 500, respectively.

Bivariate associations computed between study measures are

reported in Table 2. We found that age had a positive correlation with time spent using a smartphone, daily Instagram use, and Instagram following and follower counts, and a negative correlation with perceived subjective happiness. In turn, gender (being male) was negatively correlated with time spent on a smartphone, daily Instagram use, and involvement in cyber victimization. Time spent on a smartphone was positively related to daily Instagram use, Instagram following and follower counts, addictive social media use, and exposure to cyber victimization, and negatively correlated with subjective happiness. Daily Instagram use was positively associated with Instagram following and follower counts and addictive social media use. Instagram following and follower counts showed a moderate positive inter-correlation. Furthermore, both Instagram following and follower counts showed a positive association with addictive social media use and exposure to cyber victimization. Finally, addictive social media use and cyber victimization were positively inter-correlated, and both showed a negative correlation with perceived subjective happiness.

As regards regression analyses, the results for the main effects are reported in Fig. 1, while results concerning control variables are reported in the text below. First, we see that when including both Instagram following and follower counts in the same model, the number of Instagram followers showed a positive effect on adolescents' perceived happiness, while the following count does not. Furthermore, adolescents' Instagram followers count positively predicted both their social media addiction and exposure to cyber victimization, while the Instagram following count showed an opposite effect. In turn, both social media addiction and cyber victimization showed a negative effect on adolescents' subjective happiness. The results concerning tested indirect effects are reported in Table 3. The results supported the existence of indirect effects passing through social media addiction and cyber victimization, linking Instagram follower and following counts to adolescents' subjective happiness. Specifically, adolescents' followers count showed a negative indirect effect on subjective happiness via an increase in social media addiction and exposure to cyber victimization. In turn, adolescents' following counts showed a positive indirect effect on subjective happiness via a decrease in social media addiction and exposure to cyber victimization.

As regards control variables, age showed significant negative effects on social media addiction ($b = -0.17$, 95% CI [-0.32, -0.03]), cyber victimization ($b = -0.40$, 95% CI [-0.76, -0.06]), and subjective happiness ($b = -0.37$, 95% CI [-0.70, -0.02]). In turn, time spent using a smartphone showed positive effects on both cyber victimization ($b = 0.21$, 95% CI [0.09, 0.33]) and social media addiction ($b = 0.99$,

Table 1
Descriptive statistics for study measures (N = 345).

	Number of hours								
	> 1	1	2	3	4	5	6	≥7	
Time spent on smartphone	12	26	73	69	51	42	28	44	
Daily Instagram use	240	105							
	Count								
Instagram Following	0–5	6–10	11–20	21–50	51–100	101–200	201–500	501–1000	> 1000
Instagram Followers	4	9	4	15	38	73	94	58	45
	7	7	4	24	45	81	100	49	28
	M/%	SD	Min	Max					
Gender (Male)	49%	–	–	–					
Age (years)	13.31	1.42	11	16					
Addictive social media use	13.16	4.80	6	30					
Cyber victimization	4.92	1.80	4	16					
Subjective happiness	18.59	4.46	5	28					

Table 2
Correlation between study measures (N = 345).

	1	2	3	4	5	6	7	8
1 Age								
2 Gender (Male = 1, Female = 0)	0.075							
3 Time spent using smartphone	0.207**	–0.152**						
4 Daily Instagram Use (Yes = 1; No = 0)	0.222**	–0.117*	0.321**					
5 # Instagram following	0.268**	–0.084	0.293**	0.438**				
6 # Instagram followers	0.420**	–0.039	0.263**	0.430**	0.578**			
7 Addictive social media use	0.032	–0.103	0.440**	0.290**	0.122*	0.240**		
8 Cyber victimization	0.021	–0.116*	0.259**	0.072	0.121*	0.208**	0.298**	
9 Subjective happiness	–0.106*	0.084	–0.148**	–0.091	–0.053	–0.023	–0.299**	–0.263**

Note. * p < .05, ** p < .01.

95% CI [0.73, 1.26]). Daily Instagram use showed a significant positive effect on social media addiction (b = 1.81, 95% CI [0.75, 2.86]), but it did not reveal an effect on cyber victimization. Gender did not show significant effects on any study variable.

5. Discussion

The present study investigated the links between two specific indicators of the size of adolescents’ social network size on Instagram—namely, the following and followers counts—and their perceived level of addiction to social media, their exposure to cyber victimization, and their subjective happiness. In accordance with our hypotheses, we found both indicators showed a positive association with social media addiction and exposure to online victimization, with the Instagram followers count showing the strongest effect-size. In turn, contrarily to our expectations, both indicators did not show a significant association with subjective happiness when examined separately using zero-order correlations. However, when their effects were examined conjointly in the path model, adolescents’ Instagram followers count positively

predicted their current level of perceived subjective happiness, while their following count did not. Furthermore, as expected Instagram followers and following showed distinct effects on social media addiction and exposure to cyber victimization: adolescents’ Instagram followers count was positively related to both social media addiction and cyber victimization, while the Instagram following count showed a negative effect. Finally, we found support for the hypotheses positing the existence of negative indirect effects linking adolescents’ popularity on Instagram and subjective happiness by means of a heightened risk for cybervictimization and social media addiction. Interestingly, adolescent’ following count showed a positive indirect effect on happiness via a decrease in cybervictimization and social media addiction. Overall, these results indicate that, as adolescents become more popular on Instagram (i.e., have more followers), an increase can be observed in the risk that they could become addicted to Instagram use, and to be exposed to cyber victimization events, which in turn may affect their current psychological well being. Instead, the number of followed profiles appears to be linked with a protective effect by means of decreasing their risk for addiction and cybervictimization. This finding

Table 3
Direct and indirect effects of the number Instagram followers and following on subjective happiness (N = 345).

	Effect	SE	LL	UL	
# Instagram Followers	Direct effect	0.479	0.200	0.086	0.871
	Total indirect effect	–0.277	0.095	–0.487	–0.119
	Cyber victimization → Subjective happiness	–0.116	0.073	–0.295	–0.015
	Social media addiction → Subjective happiness	–0.161	0.059	–0.287	–0.056
# Instagram Following	Direct effect	–0.184	0.186	–0.549	0.182
	Total indirect effect	0.217	0.074	0.079	0.374
	Cyber victimization → Subjective happiness	0.085	0.047	0.009	0.189
	Social media addiction → Subjective happiness	0.132	0.053	0.039	0.247

Note. Bias-corrected bootstrap estimates are reported (10,000 samples).

seems to suggest that, regardless of their level popularity, users who report a larger Instagram following counts, may experience lower levels of addiction and cyber victimization, and heightened happiness, possibly because of a healthier balance between passive use of the platform (i.e., profiles browsing and content consumption), and digital status seeking behaviors.

Overall, our results indicate that the size of adolescents' social networks is a factor in determining their level of perceived happiness, and that this effect is mediated by their level of social media addiction, and exposure to cyber victimization. In doing this, our study confirm the trend in literature indicating an association between the increased use of social networks and the risk of cyber victimization (Juvonen & Gross, 2008; Staksrud et al., 2013). Also, our data reinforce the association between social media addiction (Brown & Tiggemann, 2016; Kuss & Griffiths, 2011; Lup et al., 2015; Sherlock & Wagstaff, 2018), cyber victimization experiences (Fisher et al., 2016; Tsitsika et al., 2015), and lowered psychological well-being.

Instagram is among the most used SNS by teens (Piper Jaffray, 2019; Marengo et al., 2018) and is considered among the most dangerous for the welfare of minors (Royal Society for Public Health (2017) (2017), 2017). In the online context, teens can meet their psychological needs, such as the sense of belonging and the building of their own popularity—the so-called digital status. Some adolescents may have deficits in meeting these needs, and therefore adopt more frequent behaviors to meet them, in order to, for example, obtain reassurances or strengthen their digital status and their popularity. On Instagram, this could result in a search for more followers, which could be considered to be digital status-seeking behavior (Nesi et al., 2018). Furthermore, a greater number of followers can be perceived as a positive social reinforcement, thus activating the reward system in the adolescent (Luciana, 2013; Sherman et al., 2018). It is likely that in adolescents, in particular for those in whom the theme of popularity could be salient, the activation of the reward system could lead to a social media addiction. A greater number of followers represents an extension of contacts in adolescents' social networks, which can represent a risk factor for their online victimization (Longobardi, Fabris, Prino, & Settanni, 2020). Furthermore, the literature has highlighted how popular adolescents, both in the real world and in the online world, present a high risk of victimization as they are potential targets of aggression from other popular or less popular peers. In an evolutionary perspective, the former represent rivals, while the latter use aggression to elevate their status in the group or gain greater popularity. In this way, the number of followers could lead to a decrease in measures related to psychological well-being, such as subjective happiness, by being associated with greater social media addiction and an increased risk of online victimization.

As far as we are aware, this is the first study in the literature that investigates two inter-related constructs (cyber victimization and social media addiction) as mediators between the number of followers/following on Instagram and measures of psychological well-being. However, our data must be read in light of the limitations that the study presents. First, the study was conducted in a restricted geographical area. Therefore, the generalizability of results to different context is limited. Next, the research adopts a cross-sectional approach that limits the ability to interpret the relationship between variables investigated from a causal perspective. In addition, because of privacy considerations, data were collected exclusively through self-reporting tools, so there may have been limits regarding social desirability, text comprehension, and memory. Future research may adopt a longitudinal approach and use third-party data sources and observers. The lack of important indicators of adolescents' activity on Instagram, such as the number of post and stories shared online, as well other alternative indicators of peer feedback (e.g., number of Likes, comments, or post visualizations), represents another limitation of the study that may have in part compromised the validity of our assessments of adolescents' engagement with the platform. By examining a broader range of

indicators of users' interaction with the platform, future researches might be able to provide a clearer view concerning the link between adolescents' use of Instagram features in relation with their psychological well-being. In this context, qualitative research could be beneficial to integrate quantitative data in trying to deepen the study of the motivations and subjective experiences of adolescents in relation to their actual behaviors on Instagram.

Keeping in mind the limits of our work and future indications for research, our study also offers some practical ideas for the promotion of psychological well-being in adolescents. The study indicates the need to target intervention and prevention strategies aimed at the risk of cyber-victimization and addiction to social media in adolescents who use SNS. These strategies can focus on the way adolescents use and experience SNS, reflecting, in particular, on the number of followers and the following and attempting to discuss the motivations and dynamics that help guide the search for a greater digital status. This theme may also be of interest in counseling services for teenagers, in particular, for adolescents who experience a reduction in psychological well-being linked to the excessive use of SNS or the experience of exposure to online victimization.

CRedit authorship contribution statement

C. Longobardi: Conceptualization, Investigation, Writing - original draft, Writing - review & editing. **M. Settanni:** Validation, Formal analysis, Supervision. **M.A. Fabris:** Investigation, Writing - original draft. **D. Marengo:** Formal analysis, Methodology, Formal analysis, Supervision.

Declaration of Competing Interest

The authors declare that they have no conflict of interest.

Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chilgyouth.2020.104955>.

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