**Boursier, V., Griffiths, M.D. & Gioia, F. (2020). Do selfie-expectancies and social appearance anxiety predict adolescents' problematic social media use? *Computers in Human Behavior*, https://doi.org/10.1016/j.chb.2020.106395**

## ABSTRACT

In contemporary society, social media use has become a widespread daily activity, especially among adolescents, who are often engaged in visual content sharing. Taking and posting selfies on social media is one of the most popular activities associated with teens' social media use, representing a useful tool to increase their self-presentation via others' approval. However, higher exposure to visual content on social media might lead to more social comparisons and appearance concerns reinforcement. Therefore, body image-based digital activities might allow dissatisfied individuals with their appearance to create and manage their best online self-presentation, leading to potentially problematic social media use. The present study evaluated the unexplored predictive role of selfie-expectancies and social appearance anxiety on problematic social media use (referred to by some scholars as 'social media addiction'), as well as examining the possible gender differences between boys and girls. A total of 578 adolescents (mean age 16.1 years) participated in the study. Results showed that boys' anxiety concerning self-appearance and the expectancy that selfies could improve their self-confidence were both predictors of their problematic social media use. On the contrary, despite a higher level of social appearance anxiety among girls, it did not influence their social media use. The study demonstrated novel findings concerning new gender-related associations in relation to problematic social media use, social appearance anxiety, and teens' expectancies underlying selfie behavior.

## INTRODUCTION

### *Selfie practices and teens' social media use*

In recent years, social media landscape has rapidly evolved and social media use has become a ubiquitous activity (Griffiths & Kuss, 2017; van den Eijnden, Lemmens, & Valkenburg, 2016). Social media refers to producing, collaborating, and sharing contents online and it includes a wide range of Internet-related social applications, such as virtual game worlds, blogs, and social networking sites (Kuss & Griffiths, 2017). In early 2019, there were more than four billion active Internet users and 3.484 billion active social media users (We Are Social, 2019). Adolescents represent a high percentage of social media users, and 79% of teenagers aged 13 to 14 years and 84% aged 15 to 17 years have an active social media profile (Mascheroni & Ólafsson, 2018). *YouTube*, *Instagram*, and *Snapchat* are the most popular online platforms among teens (Pew Research Center, 2018). Virtual communities on social media allow individuals to create public and/or private profiles and to carry out various activities, such as interacting with and reinforcing relations, sharing interests with other people and new friends, chatting, creating and sharing photos, videos, and stories (e.g., Balakrishnan & Griffiths, 2017; Bányai et al., 2017; Boursier & Manna, 2018a; Boursier, Manna, Gioia, Coppola, & Venosa, 2018; Boyd & Ellison, 2007; Kircaburan & Griffiths, 2018; Kuss & Griffiths, 2011a, 2011b; Monacis, De Palo, Griffiths, & Sinatra, 2017; Van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008). Social

media use, especially among adolescents, provides entertainment, helps individuals develop their cognitive skills, increases social capital, and aids social interactions, supporting the teenagers' pivotal needs to belong and self-presentation (Boursier & Manna, 2018b; Griffiths & Kuss, 2017; Nadkarni & Hofmann, 2012).

According to Griffiths and Kuss (2017), social media use can arguably be considered as a "way of being". However, social media use can provide risky opportunities for teenagers (Livingstone, 2008; Munno et al., 2017), and researchers have increasingly focused on excessive and potentially "addictive" use of social media (e.g., Andreassen et al., 2016; D'Arienzo, Boursier, & Griffiths, 2019; Griffiths, Kuss, & Demetrovics, 2014). In this regard, the social media research field has given rise to controversial findings and claims, and consensual terminological and operational definitions concerning social media 'addiction' are still lacking (Kuss & Griffiths, 2017). Therefore, the generic term 'problematic' (as opposed to 'addictive') appears to be more preferred given the disagreements and debates in the field concerning terminological and operational definitions of social media misuse.

Although the empirical evidence is contentious, many studies have highlighted that the six criteria of the components model of addiction (Griffiths, 2005) can be applied to problematic social media use: salience (social networking sites use becoming the most important daily activity, leading to a preoccupation with SNS use), mood modification (the use of social media to induce mood alterations, pleasant feelings or numbing effects), tolerance (an increasing amounts of time and energy spent on social media to experience the same feelings that occurred when social media first began), withdrawal (the experience of negative psychological and physiological symptoms when the individual is unable to access social media use), relapses (unsuccessful attempts to resist using social media), and conflict (intrapsychic and interpersonal conflicts that compromise relationships, education/occupation, and that clinically impair individual mental health) (Andreassen et al., 2016; D'arienzo et al., 2019; Kuss & Griffiths, 2017; Monacis et al., 2017).

In relation to gender-related differences, the lack of a unanimous definition of problematic social media and the consequent use of different assessment measures have resulted in wide-ranging estimates of its prevalence (Bányai et al., 2017; Tifferet, & Vilnai-Yavetz, 2014). Recent studies have shown that problematic social media use appears to be higher among females than males (Andreassen, 2015; Andreassen, Pallesen, & Griffiths, 2017; Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Griffiths et al., 2014; McAndrew, & Jeong, 2012). However, Çam and Isbulan (2012) highlighted a higher prevalence of problematic social media use among males while other studies reported no association between gender and problematic social media use (Gioia & Boursier, 2019; Turel, & Serenko, 2012; Wu, Cheung, Ku, & Hung, 2013).

However, social media platforms allow both male and female users to be active creators of content, increasingly focused on photographic and visual stimuli (Balakrishnan, & Griffiths, 2017; Butkowski, Dixon, & Weeks, 2019; Cohen, Newton-John, & Slater, 2018; Feltman & Szymanski, 2018; Fox, & Vendemia, 2016; Holland & Tiggemann, 2016; Perloff, 2014; Veldhuis, Alleva, Bij de Vaate, Keijer, & Konijn, 2020). In this regard, selfie-taking and selfie-sharing represent one of the most popular activities carried out on social media facilitating the need for self-exploration, communication, attention seeking, and positive feedback from peers and strangers (Baiocco, Chirumbolo, Bianchi, Ioverno, Morelli, & Nappa, 2017; Balakrishnan & Griffiths,

2018; Dhir, Pallesen, Torsheim, & Andreassen, 2016; Diefenbach & Cristoforakos, 2017; McLean, Jarman, & Rodgers, 2019; Sung, Lee, Kim, & Choi, 2016; Katz & Crocker, 2015).

In 2013, the Oxford Dictionary elected "selfie" as the 'Word of the Year' and defined it as "a photograph that one has taken of oneself, typically one taken with a smartphone or webcam and shared via social media" (Oxford Dictionary, 2013). Recently, research has been carried out into 'selfitis' (the obsessive taking of selfies) which emphasized the potentially addictive, compulsive, and obsessive nature of selfie-behavior among a minority of individuals (Balakrishnan & Griffiths, 2018; Pakpour, Lin, Lin et al., 2020), leading to further scientific debate on the risk of medicalizing everyday behaviors (Griffiths, 2018; Griffiths & Balakrishnan, 2018; Starcevic, Billieux, & Schimmenti, 2018a, 2018b). To date, despite increasing scholarly interest, 'selfie practice' is a multidimensional and complex phenomenon that still requires further research (Boursier & Manna, 2018b; Bruno, Pisanski, Sorokowska, & Sorokowski, 2018; McLean, Jarman, & Rodgers, 2019).

Some researchers have explored different factors associated with selfie behavior including gender- and age-related differences (Albury, 2015), identifying factors of higher selfie-engagement among females and adolescents (Boursier & Manna, 2018b; Qiu, Lu, Yang, Qu, & Zhu, 2015; Sorokowska, Oleszkiewicz, Frackowiak, Pisanski, Chmiel, & Sorokowski, 2016). Traditionally, girls appeared more engaged in selfie practice than boys (e.g., Albury, 2015; Boursier & Manna, 2018b; Boursier, Gioia & Griffiths, 2020a; Dhir et al., 2016; Qiu et al., 2015; Sorokowska et al., 2016; Sorokowski et al., 2015). As previous studies have highlighted, young women appear more engaged in selfie-editing and in selfie-posting strategies, attempting to share online an ideal self-presentation and to receive positive feedback (Chae, 2017; Nelson, 2013; Senft & Baym, 2015; Warfield, 2014). However, other researchers exploring gender-related differences associated with selfie behavior have highlighted that both male and female adolescents use selfies for self-presentation purposes on social media (Dutta et al., 2016; Guo et al., 2018; Katz & Crocker, 2015), sharing different types of selfies (Boursier & Manna, 2018; Dhir, 2016; Qiu et al., 2015; Sorokowska et al., 2016; Sorokowski et al., 2015). For example, females post personal selfies and group or couple selfies, experimenting with different looks and paying attention to lighting, scenography, and posture in pictures (Nguyen, 2014; Sorokowski et al., 2015). On the other hand, males post personal selfies to improve self-confidence, increase popularity, and highlight sexual attractiveness (Boursier & Manna, 2018).

In relation to the underlying motives for selfie-taking and selfie-sharing, some studies have identified the pivotal role of social pressure, habitual passing of time, self-approval, self-confidence, mood modification, attention seeking, belonging, documenting, archiving, social competition (trying to attain more 'likes' than others), retaining special moments, and being creative (Balakrishnan & Griffiths, 2018; Bruno et al., 2018; Bij de Vaate, Veldhuis et al., 2020; Etgar & Amichai-Hamburger, 2017; Sung et al., 2016). Similarly, one previous study has specifically explored expectancies underlying selfie behavior in adolescence (i.e., Boursier & Manna, 2018b), contributing to clarify quality, as well as frequency, of selfie usage. In their study, Boursier and Manna (2018b) identified seven selfie-expectancies corresponding to three main categories: (i) positive selfie-expectancies related to self-presentation, self-confidence, and self-attractiveness issues, (ii) negative

selfie-expectancies related to web exposure and lack of control of own photos, privacy concerns, and the possible effects on significant relationships, and (iii) neutral selfie-expectancies related to the daily and ordinary nature of selfie behavior.

A more recent study confirmed the predictive role of positive selfie-expectancies on selfie-engagement among young social media users (Boursier, Gioia, & Griffiths, 2020b). However, despite the strong relationship between selfie behavior and social media use, and the relationship between adolescents' and young adults' expectancies, internet-related activities (such as sexting), and addiction (Brand, Laier, & Young, 2014; Dir, Coskunpinar, Steiner, & Cyders, 2013; Lee, Ko, & Chou, 2015; Turel & Serenko, 2012; Wegmann & Brand, 2016; Wegmann, Oberst, Stodt, & Brand, 2017), no previous studies have explored the predictive role of expectancies underlying selfie practice on problematic social media use. However, other studies have explored and confirmed a significant association between selfie behavior and self-esteem, body image, and appearance preoccupation (Boursier & Manna, 2019; Gilliland, Kiss, Morrison, & Morrison, 2018; Mills, Musto, Williams, & Tiggemann, 2018; Seyfi, & Arpacı, 2016; Shin, Kim, Im, & Chong, 2017; Veldhuis et al., 2020).

***Body image and social appearance anxiety***

As several studies have observed, higher exposure to one's own body image on social media might lead to more social comparisons, often strongly related to appearance concerns (Arroyo & Brunner, 2016; Chae, 2017; Fardouly, Diedrichs, Vartanian, & Halliwell, 2015; Fardouly & Vartanian, 2015; Manago, Ward, Lemm, Reed, & Seabrook, 2015; McLean et al., 2015; Meier & Grey, 2014; Trekels, Ward, & Eggermont, 2018). According to Valkenburg et al. (2006) and Doğan and Çolak (2016), appearance concerns tend to decrease when feedback on an individual's social media profile is positive and tend to increase when feedback is negative. In this regard, Hart and colleagues (1989, 2008) defined social appearance anxiety as the preoccupation for one's own bodily appearance and fear of situations in which one's own appearance (body and face shape, height and weight) might be negatively evaluated from the others. Contrary to social and physique anxieties, in Hart et al.'s studies (1989, 2008), social appearance anxiety particularly referred to concerns about individuals' attractiveness, occurring from a combination of personal issues and social comparison anxieties. Moreover, social appearance anxiety appears specifically related to the need to create a positive impression on other individuals, likely enhanced by the perception of one's own inadequacies to reach this goal.

Consequently, individuals' social appearance anxiety appears to be directly linked to bodily appearance (Garcia, 1998; Cash & Fleming, 2002), as well as to individuals' beliefs and perceptions of others' participation in this evaluation (Leary & Kowalski, 1995). Such anxiety represents a key issue for women, who appear to experience appearance anxiety more often than men (Cusumano & Thompson, 1997; Dakanalis et al., 2016; Jones, Vigfusdottir & Lee, 2004), even though both men and women shared similar perceptions of their physical attractiveness as a function of their level of appearance anxiety (Garcia, 1998). Furthermore, social appearance anxiety also plays a pivotal role for younger people, who, on the one hand, are typically engaged in the mentalization of changing bodies and, on the other hand, are particularly engaged in online relationships

where sharing own body images assumes pivotal relevance (Boursier & Manna, 2019; Franchina & Lo Coco, 2018; Pelosi et al., 2014; Stefanone, Lackaff, & Rosen, 2011).

Similarly, Doğan and Çolak (2016) reported the predictive role of social appearance anxiety on social media use. According to previous studies (Pempek, Yermolayeva, & Calvert, 2009; Rapee & Spence, 2004), Doğan and Çolak (2016) found that, because of higher levels of social appearance anxiety, teenagers might avoid offline social environments, feeling less anxiety concerning social media-based communications and actively using social media to express and self-present themselves as they prefer. Consequently, social media use could be a pivotal catalyst for appearance concerns, likely leading to appearance-related activities, such as selfie-taking, selfie-sharing, and selfie-editing (Brown, & Tiggemann, 2016; Cohen, Newton-John, & Slater, 2017; Doğan & Çolak, 2016; Holland & Tiggemann, 2016; Mills et al., 2018).

Indeed, the increasing attention towards visual self-presentation on social media might promote body image-related concerns (Feltman & Szymanski, 2018; Fox & Vendemia, 2016; Perloff, 2014) and trigger greater problematic social media use, especially among adolescents (Casale & Fioravanti, 2017; Gioia, Griffiths, & Boursier, 2020; Hawk, van den Eijnden, van Lissa, & ter Bogt, 2019; Wang, Xie, Fardouly, Vartanian, & Lei, 2019). The disembodied environments that social media provides alongside appearance-based activities might allow individuals who are dissatisfied with their appearance to create and manage their own best online self-presentation (Boursier & Manna, 2018b; Casale & Fioravanti, 2017; Cohen et al., 2018; Fox & Rooney, 2015; Lonergan et al., 2019; Manago et al., 2015; McLean et al., 2015), leading to higher and potentially problematic social media use (Boursier et al., 2020a; Cohen et al., 2018; Gioia et al., 2020). In this regard, the possible bidirectional nature of the relationship between (problematic) social media use and (online and offline) body image issues should be considered (Boursier, Gioia, & Griffiths, 2020a, 2020b; Gioia et al., 2020; Hawk et al., 2019).

***The present study***

In summary, previous research demonstrates that social media use is a complex phenomenon. Literature suggests that selfie-taking and selfie-sharing (which are very common social media behaviors) are positively correlated with social media use and significantly promote individuals' engagement in social media use (Chen et al., 2019; Doğan & Çolak, 2016; Lowe-Calverley & Grieve, 2018). The many online opportunities that people have to self-disclose themselves, especially through selfie-sharing, and increase their own popularity via positive feedback, might promote a process known as the *behavior-reward feedback loop* often serves as a basis for problematic social media use (Boursier et al., 2020b; Guedes et al., 2016; Hawk et al., 2019).

Moreover, social media use appears to allow individuals, especially adolescents, who are dissatisfied with own body image to strategically manage their self-presentation, utilizing pictures, selfies, videos, and other visual content. Consequently, individuals who are socially anxious about to their appearance might have greater levels of (problematic) social media use (Ayar, Gerçeker, Özdemir, & Bektas, 2018; Doğan & Çolak, 2016). However, the predictive role of selfie-expectancies on problematic social media use is unexplored and the influence of social appearance anxiety in still understudied.

Based on the aforementioned literature, the present study evaluated the predictive role of these variables on problematic social media use, paying particular attention to possible gender differences between boys and girls. It is hypothesized that selfie-related expectancies and social appearance anxiety might positively affect adolescents' problematic social media use such that higher selfie-expectancies and social appearance anxiety would be associated with greater problematic social media use. Moreover, considering possible gender-related differences and according to previous findings, it was hypothesized that expectancies underlying selfie practice and social appearance anxiety would result in more female adolescents experiencing problematic social media use than male adolescents.

## METHODS

### *Participants and procedure*

A total of 578 participants (aged 13-21 years, mean age = 16.1 years, SD = 1.514), comprising 217 males (37.5%) and 361 females (62.5%) took part in a survey study. Data collection occurred between February and April 2019. The school principal of each school was informed of the nature of the research and the measures to be used in generating the data. General information about the aim of the study was also announced in class. Participation was voluntary, confidentiality was assured, and all participants were informed that they could omit any information they did not wish to give and could withdraw from the study at any time. All students agreed to participate and completed the survey questionnaires in a classroom setting via their smartphones. The study was approved by the research team's University Research Ethics Committees and was conducted in accordance with the ethical guidelines for psychological research laid down by the Italian Psychological Association (AIP). No course credits or remunerative rewards were given for participation.

### *Measures*

*Socio-demographic information and social media usage patterns.* In this section, participants were asked questions about their gender, age, hours per day spent on social media, selfie-sharing frequency, and how often they use a selfie as their profile picture.

*Bergen Social Media Addiction Scale (BSMAS).* The Italian psychometrically validated version of the BSMAS (Monacis et al., 2017; original English version by Andreassen, Billieux, et al., 2016) was used to assess problematic social media use. The BSMAS is a six-item scale rated on a five-point Likert scale ranging from 1 (*very rarely*) to 5 (*very often*). The six items reflect core addiction symptoms: salience, mood modification, tolerance, withdrawal, conflict, and relapse (Griffiths, 2005). Each item deals with experiences within a time frame of 12 months. In the present study, the scale had a good Cronbach's α coefficient (.75), comparable with the very good value (.88) reported in Monacis et al.'s original Italian study (2017).

*Selfie-Expectancies Scale (SES).* The SES (Boursier & Manna, 2018b) in an Italian psychometrically validated measure that assesses expectancies concerning selfie-behavior and comprises 23 items corresponding to seven different factors: relational worries (e.g., *"How much selfie-taking might damage your reputation?"*), web-related anxieties (e.g., *"How much selfie-taking might worry you because your photos/identity could be stolen?"*), sexual desire (e.g., *"How much selfie-taking improves your sexual fantasies?"*), ordinary practice

(e.g., *"How much selfie-taking is a habit?"*), self-confidence (e.g., *"How much selfie-taking improves your self-esteem?"*), self-presentation (e.g., *"How much selfie-taking is a way to show to the others the best part of you?"*), and generalized risks (e.g., *"How much selfie-taking might cause you problems in the future?"*). These factors correspond to three main categories of selfie-expectancies: (i) neutral expectation (ordinary practice), (ii) positive expectations (sexual desire, self-confidence, and self-presentation), and (iii) negative expectations (relational worries, web-related anxieties, and generalized risks). Each item is answered on a five-point Likert scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). In the present study, the Cronbach's α values for each SES subscale ranged from .67 to .87 and were in line with a previous study using the Italian SES (Boursier & Manna, 2018b).

*Social Appearance Anxiety Scale (SAAS)*. The Italian psychometrically validated version of SAAS was used (Dakanalis et al., 2016; original English version by Hart et al., 2008) to assess social appearance anxiety. The SAAS is a 16-item scale rated on a 5-point Likert ranging from 1 (*not at all*) to 5 (*extremely*). This scale assesses anxiety about being negatively evaluated by others because of overall appearance and body shape (e.g., "I get nervous talking to people because of the way I look," and "I worry that others talk about flaws in my appearance when I'm not around"). In the present study, the scale had an excellent Cronbach's α coefficient (.94).

***Statistical analysis***

Descriptive statistics and preliminary analysis of variance (ANOVA) was used to assess differences between groups. Pearson's correlations between the study variables were performed. Logistic regression analyses were performed to explore the predictive effect of selfie-expectancies dimensions and social appearance anxiety on social media addiction, in the entire sample and for each gender. Applying a Bonferroni correction, a *p*-value of .01 was set as the criterion for statistical significance. All statistical analyses were performed using the Statistical Package for Social Sciences SPSS (Version 23 for Windows).

**RESULTS**

In order to investigate whether male and female subsamples differed, applying a Bonferroni correction, an ANOVA was run with gender as the independent variable and all other variables as the dependent variables. As shown in Table 1, compared to boys, girls reported statistically significant higher scores in hours a day spent on social media, selfie-sharing frequency, frequency of selfie being used as a profile picture, SAAS, and SES web-related anxieties. Boys had higher scores on SES sexual desire. Bivariate correlations between all variables are shown in Table 2.

The hierarchical regressions for both boys and girls are shown in Table 3. In the female sample, SES relational worries, SES sexual desire, and SES ordinary practice were significant in the first step. After adding SAAS, SES sexual desire did not remain a significant predictor, but the statistical significance of SES ordinary practice increased, and SES relational worries was still significant. The final model accounted for 22.6% of the variance ($F_{(1,352)}$=3.096; $p$=.079). For the male sample, in the first step, SES relational worries and SES self-confidence were statistically significant predictors. The addition of SAAS in the second step was significant, and SES self-confidence was still a significant predictor, but SES relational worries did not remain

a significant predictor. The final model accounted for 46.1% of the variance in males' problematic social media use ($F_{(1,208)}$=17.618; $p$<.001).

## DISCUSSION

The present study contributes to the research field in relation to the predictive effect of body image-related issues on problematic social media use. The study comprised a specific sample of mid-teen adolescents and evaluated the predictive role of social appearance anxiety and different kinds of expectancies underlying selfie behavior, one of the most common behaviors associated with social media activity. The findings confirm gender-related differences in selfie behavior. Previous studies have highlighted that girls' engagement in social media use is higher than boys, with higher rates of social and communication activities (such as social networking, instant messaging, and blogging) that reinforce preexisting relationships, as well as in selfie-taking and selfie-sharing (Bányai et al., 2017; Boursier & Manna, 2018b; Herring & Kapidzic, 2015; Kimbrough, Guadagno, Muscanell, & Dill, 2013; Pew Research Center, 2018; Qiu et al., 2015; Sorokowska et al., 2016).

Similarly, compared to boys, girls involved in the present study spent more hours per day on social media, shared more selfies online, and more frequently used a selfie as profile picture. According to the findings of previous studies (Boursier et al., 2020b; Boursier & Manna, 2018b), even though selfie-taking and selfie-sharing were activities more common among girls than boys, females were more worried about 'losing control' of their selfies online (for example, they were worried that unknown individuals could steal or retouch their selfie photos), and confirms the so-called 'privacy paradox' (Barnes, 2006). More specifically, despite privacy concerns appearing to affect mainly females (and especially teenage girls), this does not lead to them to decreasing their selfie activity engagement (Boursier & Manna, 2018b; Boursier et al., 2020b; Dhir, Torsheim, Pallesen, & Andreassen, 2017). Furthermore, according to the findings of Boursier and Manna (2018b), boys (compared to girls) appeared to indicate that excitement, sexual fantasies and feelings were important aspects of selfies. With regard to appearance concerns, according to previous studies (Burkley, Burkley, Stermer, Andrade, Bell, & Curtis, 2014; Cusumano & Thompson, 1997; Dakanalis et al., 2016; Jones et al., 2004; Zimmer-Gembeck, Webb, Farrell, & Waters, 2018), in the present study, girls reported higher levels of social appearance anxiety compared to boys. Finally, the present study did not find any statistically significant difference between girls' and boys' problematic social media use scores. This is different from previous studies (Andreassen et al., 2016; Monacis et al., 2017) which reported females showed a higher levels of problematic social media use than males.

The present study showed strong correlations among selfie-expectancies, social appearance anxiety, and problematic social media use, especially among boys. The male sample displayed higher correlations among all dimensions of expectancies underlying selfie behavior and the other variables. Previous studies have reported the co-occurrence of Internet-related addictive behaviors and social anxiety among males (Durak, & Senol-Durak, 2013; Weinstein et al., 2015), and the present study confirms the strong association between boys' problematic social media use and social appearance anxiety.

The linear regression models only in part confirmed the hypotheses. Indeed, expectations underlying selfie activity and social appearance anxiety only partially positively affected problematic social media use among both male and female samples. The tested model accounted for a higher percentage of variance among males compared to females. More specifically, the boys' expectation that selfies increased their self-esteem, increased their status among peers, and increased their confidence appeared to predict problematic social media use. In addition, and unexpectedly, social appearance anxiety predicted problematic social media use among male adolescents, but not among females. As stated by Doğan and Çolak (2016), males who feel anxiety concerning their self-appearance (and expect that posting selfies will improve their self-confidence) may use social media as a protective shield, meeting their need of keeping in touch with others.

On the contrary, despite girls' higher level of social appearance anxiety, it was not a predictor of problematic social media use. Although previous studies have highlighted the pivotal role of appearance-related concerns on girls' problematic social media use (Boursier et al., 2020a; Gioia et al., 2020), the present study suggests that females' social appearance anxiety might represent a main issue in other potentially negative outcomes, for example eating disorders, as previous studies have reported (Claes, Hart, Smits, Van den Eynde, Mueller, & Mitchell, 2012; Dakanalis et al., 2016; Koskina, Van den Eynde, Meisel, Campbell, & Schmidt, 2011; Turel et al., 2018).

In the present study, females were more worried than males about what other individuals might do with the selfies they post in online social media but, at the same time, their selfie behavior is a typical (and ubiquitous) practice, undermining the identification of selfie-related risks. Interestingly, the expectancies that selfie-taking and selfie-sharing are ordinary practices predicted problematic social media use. It is likely that girls who are typically more engaged in personal visual content sharing on social media, might seriously underestimate selfie-related risks, considering it an ordinary practice. Nevertheless, among female adolescents, habitual activities and behaviors, as well as selfie-sharing consequences, represent strong reinforcing behaviors. Furthermore, higher investment in some activities and behaviors might lead to a perseverance in repeating them (Griffiths, 2018).

The present study's findings provided some novel previously unreported issues. Firstly, the findings demonstrated the strong association between problematic social media use and teenagers' expectancies underlying selfie behavior (i.e., selfie-taking and selfie-sharing), one of the most common activities carried out online (Baiocco et al., 2017; Balakrishnan & Griffiths, 2018; Dhir et al., 2016; Diefenbach & Cristoforakos, 2017; Sung, Lee, Kim, & Choi, 2016; Katz & Crocker, 2015). Adolescents are typically engaged in their identity construction and new body integration processes (Boursier & Manna, 2019; Zhao, Grasmuck, & Martin, 2008). Consequently, selfie-taking, selfie-sharing, and social media use provides them with risky but rewarding opportunities. Secondly, selfie behavior appears to be nuanced. Different to previous findings (Albury, 2015; Boursier & Manna, 2018b), the present study found that selfie behavior did not appear to be a mainly female phenomenon. On the one hand, despite a conflicting and ambivalent relationship with selfies, girls appear to be more engaged in selfie-taking and selfie-sharing but, on the other hand, selfie-expectancies appear to play a pivotal role in problematic social media use, especially among boys.

Additionally, the present study appeared to confirm the strong relationship between social appearance anxiety and the need to create a positive impression on others (as are the expectancies that selfie-sharing might improve one's own self-confidence) (Hart et al., 1989, 2008), especially among male adolescents. Moreover, these dimensions proved to be important predictors of problematic social media use among male adolescents. Therefore, according to recent studies that highlight male adolescents' increasing involvement in (and concerns about) their own online appearance-based activities (Boursier & Gioia, 2019a, 2019b; Gioia et al., 2020), the present study's findings shed new insight into male selfie behavior and body image investment. Following McLean et al. (2019) who expressed the need to include also boys in research concerning selfie practices, future research on specific gender-based differences in patterns of selfie usage are needed.

Indeed, according to previous studies (Cohen et al., 2018; Gioia et al., 2020), the present study confirmed the importance in exploring and evaluating how young users interact with their own body image on social media, often strictly related to appearance-related issues and to problematic social media use. It is likely, due to the pivotal role of social approval in adolescents' experiences (Bell, Cassarly, & Dunbar, 2018; Foulkes, & Blakemore, 2016) and the typical one-to-many style of communication and their own body image-disclosure on social media (Manago et al., 2015; Vandenbosch & Eggermont, 2012), that young users with a high level of body image concerns might be particularly vulnerable to problematic social media use (Rodgers, Melioli, Laconi, Bui, & Chabrol, 2013).

***Limitations and conclusion***

Some limitations of the present study also need to be addressed. Firstly, the study used a self-report questionnaire and its potential biases are well known. Secondly, the cross-sectional nature of the study and the specific geographic area of the sample limits the ability to formally test the causality of the data. Furthermore, the sample was not gender-balanced (with significantly more females participating). Finally, the present study explored only a small number of variables in relation to the complex construct of problematic social media use. Other aspects should be explored alongside the variables investigated here. For example, selfie-expectancies may affect teens' body image control, before and after the selfie-sharing, through photo manipulation. Boys' and girls' body images appear to be pivotal concerns that are related to problematic social media use. Finally, the findings reported here clearly show the need for interventions to promote teens' awareness about selfie-related and social media-related risks, increasing their capability to manage their appearance concerns.

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Table 1. One-way ANOVA by gender with means and standard deviations for gender variables.

| | Mean (SD) | | | |
|---|---|---|---|---|
| | **Males** | **Females** | ***F* (df)** | **Significance** |
| **Hours a day on social media** | 3.18 (1.261) | 3.55 (1.137) | $13.862_{(1,576)}$ | **<.001** |
| **Selfie-sharing** | 2.77 (2.393) | 3.50 (2.123) | $14.735_{(1,576)}$ | **<.001** |
| **Selfie as profile picture** | 2.24 (1.368) | 2.81 (1.432) | $22.211_{(1,576)}$ | **<.001** |
| **SES relational worries** | 2.07 (1.011) | 1.92 (.896) | $3.451_{(1,576)}$ | .064 |
| **SES web-related anxieties** | 2.38 (1.313) | 2.76 (1.371) | $10.961_{(1,576)}$ | **.001** |
| **SES sexual desire** | 1.96 (.999) | 1.4 (.634) | $67.969_{(1,576)}$ | **<.001** |
| **SES ordinary practice** | 3.35 (1.109) | 3.34 (1.072) | $.008_{(1,576)}$ | .927 |
| **SES self-confidence** | 2.18 (1.121) | 2.06 (1.021) | $1.737_{(1,576)}$ | .188 |
| **SES self-presentation** | 2.53 (1.155) | 2.38 (1.001) | $2.826_{(1,576)}$ | .093 |
| **SES generalized risks** | 2.45 (1.012) | 2.31 (.871) | $3.198_{(1,576)}$ | .070 |
| **Social Appearance Anxiety Scale** | 2.29 (1.011) | 2.55 (1.034) | $9.192_{(1,576)}$ | **.003** |
| **Bergen Social Media Addiction Scale** | 2.28 (.879) | 2.41 (.865) | $3.174_{(1,576)}$ | .075 |

Note: SES=Selfie Expectancies Scale. A Bonferroni correction was applied.

Table 2. Bivariate correlations between all variables (Male data below the diagonal, female data above the diagonal).

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1 Hours a day on social media** | - | **.409**$^{**}$ | **.198**$^{**}$ | **.244**$^{**}$ | **.149**$^{*}$ | **.236**$^{**}$ | **.287**$^{**}$ | **.384**$^{**}$ | **.339**$^{**}$ | .078 | **.216**$^{**}$ | **.498**$^{**}$ |
| **2 Selfie-sharing** | **.430**$^{**}$ | - | **.330**$^{**}$ | **.260**$^{**}$ | .061 | **.178**$^{**}$ | **.295**$^{**}$ | **.422**$^{**}$ | **.397**$^{**}$ | -.106 | .092 | **.391**$^{**}$ |
| **3 Selfie as profile picture** | **.169**$^{**}$ | **.195**$^{**}$ | - | **.301**$^{**}$ | .095 | **.199**$^{**}$ | **.191**$^{**}$ | **.358**$^{**}$ | **.401**$^{**}$ | -.018 | **.244**$^{**}$ | **.350**$^{**}$ |
| **4 SES relational worries** | **.141**$^{**}$ | **.118**$^{*}$ | -.026 | - | **.507**$^{**}$ | **.401**$^{**}$ | **.309**$^{**}$ | **.520**$^{**}$ | **.520**$^{**}$ | **.346**$^{**}$ | **.415**$^{**}$ | **.486**$^{**}$ |
| **5 SES web-related anxieties** | .027 | -.028 | -.037 | **.405**$^{**}$ | - | **.249**$^{**}$ | **.267**$^{**}$ | **.356**$^{**}$ | **.378**$^{**}$ | **.390**$^{**}$ | **.378**$^{**}$ | **.369**$^{**}$ |
| **6 SES sexual desire** | .052 | **.122**$^{*}$ | .073 | **.152**$^{**}$ | .019 | - | **.284**$^{**}$ | **.479**$^{**}$ | **.433**$^{**}$ | **.293**$^{**}$ | **.295**$^{**}$ | **.404**$^{**}$ |
| **7 SES ordinary practice** | **.304**$^{**}$ | **.319**$^{**}$ | **.170**$^{**}$ | **.205**$^{**}$ | .021 | **.227**$^{**}$ | - | **.439**$^{**}$ | **.545**$^{**}$ | .109 | **.215**$^{**}$ | **.378**$^{**}$ |
| **8 SES self-confidence** | **.114**$^{*}$ | **.212**$^{**}$ | **.113**$^{*}$ | **.265**$^{**}$ | .073 | **.407**$^{**}$ | **.355**$^{**}$ | - | **.724**$^{**}$ | **.163**$^{*}$ | **.472**$^{**}$ | **.581**$^{**}$ |
| **9 SES self-presentation** | .092 | **.158**$^{**}$ | .096 | **.201**$^{**}$ | **.114**$^{*}$ | **.409**$^{**}$ | **.328**$^{**}$ | **.660**$^{**}$ | - | **.229**$^{**}$ | **.372**$^{**}$ | **.512**$^{**}$ |
| **10 SES generalized risks** | -.069 | **-.138**$^{**}$ | -.015 | **.323**$^{**}$ | **.433**$^{**}$ | **.109**$^{*}$ | .025 | .073 | **.150**$^{**}$ | - | **.333**$^{**}$ | **.241**$^{**}$ |
| **11 Social Appearance Anxiety Scale** | -.052 | -.055 | -.013 | **.267**$^{**}$ | **.178**$^{**}$ | **.149**$^{**}$ | .024 | **.188**$^{**}$ | **.114**$^{*}$ | **.200**$^{**}$ | - | **.516**$^{**}$ |
| **12 Bergen Social Media Addiction Scale** | **.422**$^{**}$ | **.245**$^{**}$ | **.170**$^{**}$ | **.333**$^{**}$ | .044 | **.259**$^{**}$ | **.292**$^{**}$ | **.325**$^{**}$ | **.290**$^{**}$ | .060 | **.182**$^{**}$ | - |

Note: SES=Selfie Expectancies Scale; **$p$=.01; *$p$=.05

Table 3 - Hierarchical regression analyses by gender.

| | | | B | SE | *β* | t | Sign. | $R^2$ | Adj$R^2$ | SE | $F_{(dfn,dfd)}$ | *p* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Females** | **Step 1** | **SES relational worries** | .274 | .053 | .284 | 5.202 | <.001 | .219 | .204 | .772 | $14.157_{(7,353)}$ | <.001 |
| | | **SES web-related anxieties** | -.050 | .035 | -.079 | -1.437 | .152 | | | | | |
| | | **SES sexual desire** | .150 | .072 | .110 | 2.077 | .039 | | | | | |
| | | **SES ordinary practice** | .118 | .041 | .146 | 2.838 | .005 | | | | | |
| | | **SES self-confidence** | .091 | .056 | .107 | 1.622 | .106 | | | | | |
| | | **SES self-presentation** | .072 | .056 | .083 | 1.279 | .202 | | | | | |
| | | **SES generalized risks** | -.033 | .053 | -.034 | -.629 | .530 | | | | | |
| | **Step 2** | **SES relational worries** | .259 | .053 | .268 | 4.855 | <.001 | .226 | .208 | .77 | $3.096_{(1,352)}$ | .079 |
| | | **SES web-related anxieties** | -.053 | .035 | -.084 | -1.523 | .129 | | | | | |
| | | **SES sexual desire** | .140 | .072 | .103 | 1.937 | .054 | | | | | |
| | | **SES ordinary practice** | .123 | .041 | .152 | 2.964 | .003 | | | | | |
| | | **SES self-confidence** | .079 | .056 | .093 | 1.403 | .162 | | | | | |
| | | **SES self-presentation** | .077 | .056 | .088 | 1.364 | .173 | | | | | |
| | | **SES generalized risks** | -.043 | .053 | -.043 | -.804 | .422 | | | | | |
| | | **Social Appearance Anxiety Scale** | .073 | .042 | .088 | 1.759 | .079 | | | | | |

| | | | B | SE | $\beta$ | t | Sign. | $R^2$ | Adj$R^2$ | SE | $F_{(dfn,dfd)}$ | *p* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Males** | **Step 1** | **SES relational worries** | .138 | .061 | .158 | 2.245 | .026 | .416 | .396 | .683 | $21.238_{(7,209)}$ | <.001 |
| | | **SES web-related anxieties** | .054 | .043 | .081 | 1.247 | .214 | | | | | |
| | | **SES sexual desire** | .084 | .056 | .095 | 1.511 | .132 | | | | | |
| | | **SES ordinary practice** | .080 | .050 | .101 | 1.595 | .112 | | | | | |
| | | **SES self-confidence** | .264 | .064 | .337 | 4.117 | <.001 | | | | | |
| | | **SES self-presentation** | .036 | .065 | .047 | .554 | .580 | | | | | |
| | | **SES generalized risks** | .043 | .052 | .050 | .833 | .460 | | | | | |
| | **Step 2** | **SES relational worries** | .112 | .059 | .129 | 1.891 | .060 | .461 | .441 | .657 | $17.618_{(1,208)}$ | <.001 |
| | | **SES web-related anxieties** | .031 | .042 | .046 | .734 | .464 | | | | | |
| | | **SES sexual desire** | .082 | .053 | .094 | 1.543 | .124 | | | | | |
| | | **SES ordinary practice** | .084 | .048 | .106 | 1.732 | .085 | | | | | |
| | | **SES self-confidence** | .190 | .064 | .242 | 2.948 | .004 | | | | | |
| | | **SES self-presentation** | .044 | .062 | .058 | .704 | .482 | | | | | |
| | | **SES generalized risks** | .000 | .051 | .001 | .009 | .993 | | | | | |
| | | **Social Appearance Anxiety Scale** | .225 | .054 | .259 | 4.197 | <.001 | | | | | |

Note: SES=Selfie Expectancies Scale