Adolescents' Body Shame and Social Networking Sites: The Mediating Effect of Body Image

Control in Photos

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Abstract

Adolescents' social networking site (SNS) use has dramatically grown in the past few years and has increasingly become focused on pictures and visual self-presentation. Attention directed toward online physical appearance appears to trigger some body-related behaviors (e.g., body image monitoring) which potentially are related to self-objectification and problematic SNS use. Indeed, the use of social media platforms (including the active creation of content and peer interactions) provides a highly accessible medium for socializing with self-objectification. The present study evaluated the previously unexplored predictive role of body shame on SNS use, testing the mediating effect of body image control in photos on SNS. A total of 693 Italian adolescents (45% male; M_{age} =16, range = 13–19 years-old) participated in the study. Results only partially confirmed the direct effect of body shame on problematic SNS use. However, body shame strongly predicted body image control in SNS photos, leading indirectly to both male and female adolescents' problematic social media use. The study demonstrated novel findings in the field of self-objectification research and contributes toward the ongoing debate on possible predictors of problematic SNS use.

Keywords. Body shame, Self-objectification, Body image, Problematic social network sites use, Social networking, Adolescence

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Young people's engagement in internet-based activities has grown rapidly and

dramatically over the past few years (Boursier & Manna, 2018a; Franchina & Lo Coco, 2018;

Gioia & Boursier, 2019; Kırcaburun, Kokkinos, Demetrovics, Király, Griffiths, & Çolak, 2019),

especially in activities concerning social media use (D'Arienzo, Boursier, & Griffiths, 2019;

Kuss & Griffiths, 2017). In early 2019, in Italy, there were more than 35 million active social

media users (We Are Social, 2019) and adolescents represented a high percentage of social

media users. *YouTube*, *Instagram*, and *Snapchat* appear the most popular online platforms

among teenagers (Pew Research Center, 2018).

Social networking sites (SNS) are constantly available, virtual communities that allow

users to create individual private or public profiles, interact with "offline" friends, meet other

people sharing common interests, view others' activities, comment on others' activities, "like"

others' activities, and share various forms of content (Balakrishnan, & Griffiths, 2017; Boursier,

Manna, Gioia, Coppola, & Venosa, 2018; boyd & Ellison, 2007; Cohen, Newton-John, & Slater,

2018; Holland & Tiggemann, 2016; Kuss & Griffiths, 2011b, 2017; Perloff, 2014; Tiggemann &

Slater, 2017). Unlike traditional mass media (i.e., magazines, movies, television), SNS content is

peer-generated, meaning that these communities allow its users to be not just passive receivers,

but also active creators, of content, in turn enhancing user engagement (Balakrishnan, &

Griffiths, 2017; Butkowski, Dixon, & Weeks, 2019; Cohen et al., 2018; Fox, & Vendemia, 2016;

Holland & Tiggemann, 2016; Perloff, 2014; Veldhuis, Alleva, Bij de Vaate, Keijer, & Konijn,

2020).

Nowadays, the widespread use of SNS has led to considering social networking as a

"way of being" (Kuss & Griffiths, 2017), serving the needs of peer-to-peer comparisons and belonging and representing ideal places for adolescents' construction of construction of their identities (Boursier & Manna, 2019; Pelosi, Zorzi, & Corsano, 2014; Perloff, 2014; Riva, 2010). Nevertheless, virtual communities can also provide simultaneous risks among a minority of users (Franchina & Lo Coco, 2018; Livingstone, 2008; Munno et al., 2017) and have led to debates among the scientific community regarding both the hyper-pathologization of everyday life activities (Billieux, Schimmenti, Khazaal, Maurage, & Heeren, 2015; Kuss & Griffiths, 2017; Starcevic, Billieux, & Schimmenti, 2018) and the problematic, unhealthy, and potentially addictive use of SNS (Andreassen, Billieux, Griffiths, Kuss, Demetrovics, Mazzoni, & Pallesen, 2016; Bányai et al., 2017; D'Arienzo et al., 2019; Kırcaburun, & Griffiths, 2018; Kuss & Griffiths, 2011a; 2017; Monacis et al., 2017).

Some scholars have proposed applying research concerning problematic internet use to the context of SNS use (Baker & White, 2010; Casale & Fioravanti, 2017; LaRose, Kim, & Peng, 2010; Lee, Ho, & Lwin, 2017). From this perspective, the problematic nature of online activities involves difficulties in impulse control and mood regulation, subsequent negative outcomes resulting from web misuse, and preference for online social interactions (Caplan, 2003; Pontes, Caplan, & Griffiths, 2016). Accordingly, Casale and Fioravanti (2017) highlighted that problematic SNS use derives from a perceived lack of social skills. In this regard, SNS use allows users to (a) avoid face-to-face difficulties, (b) provide greater control over informational disclosure, and (c) be strategic in managing their own self-presentation, often through visual content (e.g., pictures, videos, stories).

However, the increased focus on photographs and visual self-presentation on social networking sites (Caso, Fabbricatore, Muti, & Starace, 2019; Feltman & Szymanski, 2018)

might enhance appearance-related concerns and potentially problematic monitoring of an individual's own body image and pictures (Fox & Vendemia, 2016; Perloff, 2014). In line with this possibility, individuals' higher engagement in body image monitoring might lead to problematic social media use (Wang, Xie, Fardouly, Vartanian, & Lei, 2019b), reinforcing an appearance-based behavior-reward feedback loop and suggesting the possible bidirectional relation of SNS-appearance issues (Boursier et al., 2020a, 2020b; Hawk, van den Eijnden, van Lissa, & ter Bogt, 2019).

Body image control in picture and photo investment refers to an individual's awareness of their photo quality, concerns about how photos portray the individual, consequent online self-image, and strategies in taking and choosing photos (i.e., "selfies") before sharing with others (Boursier & Manna, 2019; McLean, Paxton, Wertheim, & Masters, 2015). It is likely that disembodied SNS environments and photo-based activities allow individuals who are dissatisfied with their appearance to create, construct, and edit their best self-presentation, overinvesting in their online body image (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). The visual attention directed toward body appearance (for example, in a mirror or pictures) might trigger behaviors such as body monitoring, potentially related to self-objectification and body shame experiences (Butkowski et al., 2019; De Vries & Peter, 2013; Fox & Vendemia, 2016; Vandenbosch & Eggermont, 2012). Finally, body image-related activities and strategies of self-presentation (such as appearance monitoring) might lead to problematic SNS use (Boursier & Manna, 2019; Boursier et al., 2020a; Cohen et al., 2018).

Self-objectification experiences and social networking

In recent years, sharing self-focused visual content on social media has become a

pervasive practice and objectification theory (Fredrickson & Roberts, 1997) might represent a

helpful framework to evaluate individuals' online self-presentation and SNS use (Fox &

Vendemia, 2016). Consequently, researchers have investigated the relationship between social

networking and self-objectification (Bell, Cassarly, & Dunbar, 2018; Fardouly, Diedrichs,

Vartanian, & Halliwell, 2015).

Specifically, according to the objectification theory framework (Fredrickson & Roberts,

1997), repeated objectification experiences are thought to gradually influence individuals

(especially women) to treat themselves as objects, assuming and internalizing an outside

observer's perspective on their physical selves. This internalization process is known as self-

objectification (Fredrickson & Roberts, 1997; Moradi & Huang, 2008). Accordingly, McKinley

and Hyde (1996) defined *objectified body consciousness* (OBC) as the tendency to experience

and consider the body as an object, and they operationalized it including three main components:

body surveillance (persistent thinking and habitual body monitoring assuming an outside

observer's perspective), *body shame* (due to the perceived failure to meet cultural standards of

beauty), and *appearance control beliefs* (beliefs that, with enough effort, one's bodily

appearance can be controlled) (McKinley & Hyde, 1996).

Typically, objectification theory has operated within a traditional mass media paradigm

(i.e., magazines, movies, television) (for a review, see Grabe Ward, & Hyde, 2008), proposing

that media exposure, and specifically visual content (or image) exposure, promotes body self-

objectification especially in women, enhancing experiences of body shame (Aubrey, 2006;

Fredrickson & Roberts, 1997; Meier & Gray, 2014). However, scholars' findings highlighted

how men and male adolescents are increasingly facing self-objectification experiences and

becoming involved in body image-related activities (Daniel, & Bridges, 2010; Dakanalis et al.,

2012, 2015; Holland & Tiggemann, 2016; Karsay et al., 2018; Manago et al., 2015; Moradi, 2010; Moradi & Huang, 2008; Vandenbosch & Eggermont, 2013). Therefore, ubiquitous online social media are increasingly replacing traditional mass media, and the use of online platforms (including the creation of content and peer interactions) seems to provide a novel and highly accessible medium for male and female individuals' socializing with self-objectification experiences and objectified body consciousness (Caso et al., 2019; Cohen et al., 2018; De Vries & Peter, 2013; Manago et al., 2015).

In this regard, recent studies reported that the amount of time spent on SNS was associated with greater body-objectification (Andrew, Tiggemann, & Clark, 2016; Barzoki, Mohtasham, Shahidi, & Tavakol, 2017; Graff & Czarnomska, 2019; Melioli, Rodgers, Rodrigues, & Chabrol, 2015; Slater, & Tiggemann, 2015; Vandenbosch & Eggermont, 2012, 2015). Studies have also shown that high exposure to pictures and appearance-related conversations and comparisons to different target groups on SNS (especially Facebook) are related to appearance concerns and self-objectification (Arroyo & Brunner, 2016; Fardouly et al., 2015; Fardouly & Vartanian, 2015; Manago et al., 2015; Meier & Grey, 2014; Trekels, Ward, & Eggermont, 2018). Like Facebook use, Instagram use has also been found to be positively correlated with self-objectification (Bell et al., 2018; Cohen et al., 2018; Fardouly, Willburger, & Vartanian, 2018; Feltman & Szymanski, 2018).

Within the field of objectified body consciousness research (McKinley & Hyde, 1996), the association between social networking and OBC component body surveillance has been largely explored (Boursier et al., 2020b; Doornwaard, Bickham, Rich, Vanwesenbeeck, van den Eijnden, & Ter Bogt, 2014; Manago et al., 2015; Vandenbosch & Eggermont, 2013; Veldhuis et al., 2020). On the contrary, only a few studies have focused on OBC body shame and they have

found that Facebook involvement and exposure predict body surveillance, which in turn predicts greater body shame (Manago et al., 2015; Slater & Tiggemann, 2015; Tiggemann & Slater, 2013, 2015). Similarly, a more recent study showed the predictive role of older Chinese adolescents' body-related conversations on SNS on body shame via body surveillance (Wang, Wang, Yang, Zeng, & Lei, 2019a). On SNS profiles, individuals appear to literally look at themselves from an observer's perspective (Fardouly et al., 2015), confirming a clear inter-relationship between social networking and self-objectification. Nevertheless, only one known previous study has explored the association between self-objectification issues and problematic social networking. Indeed, Boursier, et al. (2020a) recently showed the negatively predictive role of OBC appearance control beliefs on problematic social networking. A few studies have evaluated the influence of adolescents' risky sex-related online behaviors on body surveillance (Doornwaard et al., 2014; Vandenbosch, & Eggermont, 2013) and, more recently, Bianchi et al. (2017) found that OBC predicted teenagers' sexting for sexual purposes. However, no known studies have specifically focused on the effect of OBC body shame upon problematic SNS use.

From a different perspective, Casale and Fioravanti (2017) hypothesized that SNS use by individuals who experience shame might allow them to hide characteristics that are perceived negatively as well as reduce negative feelings related to shame. Their findings confirmed the predictive role of behavioral and bodily shame experiences upon problematic social networking via the perceived benefits of computer-mediated communication. Previously, another Italian study highlighted the predictive role of feelings of shame upon internet addiction (Craparo et al., 2014).

The current study

In summary, according to Dakanalis et al. (2015), individuals who perceive a discrepancy

between their appearance and culturally idealized body image might be ashamed of their body. This body shame, strongly related to self-objectification experiences, could be enhanced by the typical one-to-many style of interactions and the exposure of individuals' body image that SNS promote (Manago et al., 2015; Vandenbosch & Eggermont, 2012). Consequently, SNS users, especially adolescents, might invest in photo-related control and activities, trying to show and share on SNS their ideal self-image (McLean et al. 2015) as well as becoming more worried about their appearance and body image, picture quality, and strategies to taking, choosing, and editing their shared photos online (Boursier & Manna, 2019; Manago et al., 2015; McLean et al., 2015). Furthermore, body image control strategies might lead to specific problematic social networking among male and female adolescents (Hawk et al., 2019; Wang et al., 2019b). In this regard, how individuals interact with their body image prior to posting on SNS, often dealing with experiences of shame, appears a matter of interest for body image-related issues and problematic social networking (Cohen et al., 2018).

Thus, previous studies confirm that the field of body image research is rapidly evolving alongside the social media landscape. Empirical research has demonstrated the close relationship between body image management and SNS use, often in a problematic way especially among adolescents, and between appearance-related issues and self-objectification. However, only one known previous study has explored the effect of objectified appearance control beliefs on problematic social networking (Boursier et al., 2020a). No known studies evaluated the predictive role of OBC body shame on problematic SNS use. Therefore, in the present study we evaluated the main and indirect effects of body shame and body image control in photos on adolescents' problematic SNS use. Furthermore, the validity of this mediation model across male and female subsamples needs to be evaluated, taking into account possible gender-related

differences.

We proposed two hypotheses. First, we predicted that body shame would be positively linked to problematic SNS use and that body image control in photos would significantly mediate this relationship (Hypothesis 1). Thus, higher body shame is expected to be positively associated with greater body image in photo monitoring, which in turn would be related to greater problematic social networking (i.e., preference for online social interactions, mood regulation, cognitive preoccupation, compulsive SNS use, and negative outcomes). Second, according to self-objectification and objectified body consciousness frameworks, we hypothesized that body shame would, directly and indirectly, affect problematic social networking via body image control in photos more in young women than in young men (Hypothesis 2).

Method

Participants and procedure

We recruited a convenience sample of 693 participants (aged 13–19 years, M_{age} = 16 years, SD = 1.58); 310 (45%) male adolescents and 383 (55%) female adolescents participated in our survey study. Data collection occurred between February and April 2017 in five different Italian high schools that agreed to participate. The school principal of each school was informed of the nature of the research and the measures to be used in the survey. 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 in a classroom setting using their smartphones. The study was approved by the research team's University Research Ethics

Committee 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.

Measures

Socio-demographic information and SNS use patterns. In this section of the survey, participants were asked about gender, age, and hours per day spent on social networking sites.

Body Shame (BS). The eight-item Body Shame subscale of the Italian version of the Objectified Body Consciousness Scale (OBCS; Dakanalis et al., 2015; original English version by McKinley & Hyde, 1996) was used to assess the degree to which individuals feel shame about their bodies and its appearance (e.g., "I feel ashamed of myself when I haven't made the effort to look my best"; "When I'm not the size I think I should be, I feel ashamed"). The items were rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Appropriate items were reverse-scored before creating an average subscale score. Higher scores indicated higher levels of body shame. In this study, Cronbach's alpha was good (.79).

Body Image Control in Photos-Revised (BICP-R). The original Body Image Control in Photos questionnaire (Pelosi et al., 2014) comprised 27 items, rated on a 5-point-Likert scale from 1 (*Never*) to 5 (*Always*), and assessed adolescents' photo management and control online and offline. Boursier and Manna (2019) revised the original scale reducing length of the instrument. The new short version comprised 16 items corresponding to five different factors: a selfie-related factor (e.g., "I prefer my image as it appears in self-portraits, because I know how to make it look better"), privacy filter behaviors (e.g. "I use privacy filters in order to show photos in which I appear more attractive only to certain people"), a positive body image factor (e.g., "I post those photos which I hope will receive praise for my appearance"), a sexual

attraction factor (e.g., "I have posted provocative photos on Facebook, in order to attract

attention to myself"), and a negative body image factor (e.g., "I feel awkward if I notice that

someone has posted photos that show my body's defects"). The denomination of BICP-R factors

has been modified compared to the previous version of the questionnaire (Boursier & Manna,

2019) to improve their intelligibility. In the present study, the Cronbach's alphas for the overall

scale was very good (.82). The Cronbach alpha values for each respective subscale were .80

(selfie-related factor), .70 (privacy filter behaviors), .63 (positive body image factor), .77 (sexual

attraction factor), and .65 (negative body image factor). Boursier and Manna (2019) established a

cut-off score for identifying individuals who problematically control their body image in photos

and identified four categories: occasional (scores of 0–24), habitual (scores of 25–50), at risk

(scores of 51–55), and problematic (scores higher than 55). For the purposes of the present study

we used the full continuous measure of BICP-R.

Generalized Problematic Internet Use Scale 2 (GPIUS2). The 15-item GPIUS2 (Caplan,

2010) assessed the degree of generalized problematic internet use assessing five constructs:

preference for online social interactions (e.g., "I prefer communicating with people online rather

than face-to-face"), mood regulation (e.g., "I have used the internet to make myself feel better

when I was down"), cognitive preoccupation (e.g., "I think obsessively about going online when

I am offline"), compulsive internet use (e.g., "I have difficulty controlling the amount of time I

spend online"), and negative outcomes (e.g., "My internet use has created problems for me in my

life"*)*. Each construct comprised three items rated on a 7-point Likert scale from 1 (*strongly

disagree*) to 7 (*strongly agree*). In the present study, the Italian version of GPIUS2 (Fioravanti et

al., 2013) was used. According to Casale and Fioravanti (2017), because the items referred to the

use of internet without differentiating among different possible activities carried out online, for

the purposes of their study the word "internet" has been replaced by "social network sites" (SNS) (e.g., "I have used SNS to make myself feel better when I was down"). Similarly, we used this Casale and Fioravanti's (2017) last version in the present study and the Cronbach's alpha was .88. The Cronbach alpha values for each respective subscale were .69 (preference for online social interactions), .73 (mood regulation), .81 (cognitive preoccupation), .82 (compulsive SNS use), and .75 (negative outcomes).

Statistical analysis

Descriptive statistics were used to assess the mean and standard deviation of the variables, and 95% confidence intervals of means are also presented. Applying a Bonferroni correction, independent *t*-tests were used to assess gender differences, and the magnitude of the differences was evaluated with effect sizes (Cohen's *d*). Path analyses within structural equation modelling (SEM) were used to test Hypothesis 1 which expected that body shame predicts problematic social networking through the mediating effect of body image control in photos. Due to deviation from the normal distribution, maximum likelihood estimation robust to non-normality (MLR) was used (Muthén & Muthén, 2012). In order to test Hypothesis 2 which expected a higher mediation model relevance among female than among male adolescents, a multi-group analysis has been preferred to the two single-group models to test the equivalence of the structural parameters across male and female subsamples.

To evaluate the overall model fit, the χ^2 goodness-of-fit statistic, the comparative fit index (CFI), the Tucker-Lewis Fit Index (TLI), root mean square error approximation (RMSEA), and the standardized root mean square residuals (SRMR) were used. CFI and TLI are indices related to the total variance accounted by the model, and values higher than 0.90 are desired (Bentler, 1990). RMSEA is related to the variance of residuals, and values smaller than 0.08 are

desired (Browne & Cudeck, 1993). A value of the SRMR below 0.08 is considered a good fit

(Kline, 2015). The Satorra–Bentler χ^2 difference test (ΔSBχ2) has been used to test the relative fit

of nested models (Satorra, 2000). When the more constrained model was rejected, a gradually

less restrictive model of partial invariance was tested. Descriptive analyses were performed with

the SPSS 23 statistical software package SPSS Inc., Chicago, IL), and all SEM analyses were

performed with MPlus 8 (Muthén & Muthén 2012).

Results

Descriptive statistics

Bivariate correlations among all variables are shown in Table 1. Descriptive analyses

were performed, and gender differences were tested applying a Bonferroni correction (see Table

2). Statistically significant differences with relevant effect sizes were found between young men

and young women. Female adolescents reported higher mean scores in OBCS body shame, BICP

selfie-related factors, BICP positive body image factors, BICP negative body image factors,

PSNSU mood regulation, PSNSU cognitive preoccupation, and PSNSU compulsive SNS use.

Male adolescents showed higher mean scores in BICP sexual attraction factors and PSNSU

negative outcomes. In terms of BICP descriptive cut-off categories, findings showed that 10.3%

($n = 72$) of the sample occasionally controlled their own body image in photos, 66.7% ($n = 462$)

habitually controlled it, 11.7% ($n = 81$) controlled it in a risky way, and 11.3% ($n = 78$)

controlled it in a problematic way. Female adolescents reported a higher percentage of both risky

control (50 female adolescents [13.1%] vs. 31 male adolescents' [10%;] $p<.001$) and problematic

control (56 female adolescents [14.6%] vs. 22 male adolescents' [7.1%]; $p<.001$) on their body

images in photos.

Mediation analyses

The proposed mediation model was tested utilizing structural equation modeling (SEM). At first, we tested an unconstrained model across male and female subsamples. This model produced an inadequate fit to the data, $MLR\chi^2(48) = 269.7$, $p < .001$; $CFI = .89$; $TLI = .75$; RMSEA=.116, 95% CI [.103,.130]; $SRMR = .083$. When the fit of the unconstrained model was compared to the fully constrained model fit and correlations were held equivalent across the two groups, the Satorra–Bentler Chi-square difference test showed that imposing the equality constraints resulted in a better model, $\Delta SB\chi^2(34) = 13.92$, $p = .999$; $MLR\chi^2(82) = 283.61$, $p < .001$; $CFI = .91$; $TLI = .89$; $RMSEA = .079$, 90% CI [.068,.090]; $SRMR = .074$. Modification indices suggested that the model could be improved by releasing the constrained paths between BICP latent variable and PSNSU mood regulation, PSNSU cognitive preoccupation, and PSNSU compulsive social network sites use, between OBC body shame and PSNSU cognitive preoccupation, and unconstraining the correlations between PSNSU mood regulation and PSNSU cognitive preoccupation, and between PSNSU mood regulation and PSNSU compulsive social network sites use. These modifications resulted in a significant improvement of the model fit, $\Delta SB\chi^2(28) = 40.37$, $p = .061$; $MLR\chi^2(76) = 229.33$, $p < .001$; $CFI = .94$; $TLI = .91$; $RMSEA = .071$, 90% CI [.060,.083]; $SRMR = .071$. Figure 1 shows the significant paths and standardized coefficients for the final model.

In the male sample, body shame had a significant direct effect on BICP, PSNSU mood regulation, PSNSU cognitive preoccupation, and PSNSU negative outcomes. Moreover, BICP was significantly and positively associated with PSNSU preference for online social interactions, PSNSU mood regulation, PSNSU cognitive preoccupation, PSNSU compulsive SNS use, and PSNSU negative outcomes though, in the female sample, body shame had a significant direct effect on BICP, PSNSU mood regulation, and PSNSU negative outcomes. Differently from male

adolescents, female adolescents' body shame did not have a significant direct effect on PSNSU cognitive preoccupation. Moreover, in the female sample, there were more significant and stronger direct effects of BICP on PSNSU preference for online social interactions, PSNSU mood regulation, PSNSU cognitive preoccupation, PSNSU compulsive SNS use, and PSNSU negative outcomes. In relation to the indirect effect between body shame and problematic SNS use, all paths were statistically significant in both female and male groups, with higher significance among young women (see Table 3).

Discussion

The present study contributes to the ongoing debate concerning predictive factors in problematic social networking site (SNS) use. The study surveyed a sample of Italian adolescents and tested a mediation model to explore the predictive role of body shame on problematic SNS use via the body image control in photos across male and female subsamples. The findings confirmed gender-related differences in body image issues. In line with the findings of previous studies (Dakanalis et al., 2015, 2017; Manago et al., 2015; McKinley, 1998; Moradi & Huang, 2008), female adolescents involved in the present study showed higher rates of body shame than male adolescents. This result fits the theory of objectified body consciousness about how dominant cultural standards concerning the female body encourage women to experience their bodies as objects and to feel ashamed when they do not fulfil cultural body standards (McKinley, 1998). However, the body shame-related difference between young men's and young women's scores showed only a modest effect size, highlighting potential changes in gender roles because social interactions are increasingly moving into online environments (Manago et al., 2015) and likely leading to growing self-objectification processes among male adolescents (Vandenbosch & Eggermont, 2013).

Concurring with Boursier and Manna (2019), the present study confirmed a main condition of risk among female adolescents in photo management and control online and offline. Compared to young men, young women had both greater risky and problematic control on their appearance in pictures, especially investing in self-portraits as a way to express their identity and managing positive and negative images in promoting their best self-presentation. However, male adolescents used greater body image control to improve their sexual attractiveness. With regard to problematic SNS use, female adolescents had higher scores on some dimensions. More specifically, female adolescents were significantly more likely than male adolescents to use SNS to enhance their mood states. They also had more obsessive thought patterns and poorer self-regulation of SNS use than young men. However, the negative outcomes due to problematic SNS use appeared to affect more young men than young women. Finally, the present study did not find any statistically significant difference between female and male adolescents' preference for online social interactions.

In line with the findings of Casale and Fioravanti (2017), the present study found a strong and positive correlation between problematic SNS use and shame (especially among male adolescents), confirming the association between SNS use and body shame-related feelings (Manago et al., 2015; Slater & Tiggemann, 2015; Tiggemann & Slater, 2015). Moreover, similar to Boursier and Manna (2019) who found a positive correlation between body appearance control in photos and adolescents' problematic internet use, the findings of the present study showed the strong and positive co-occurrence of all dimensions of problematic SNS use and control on self-photos online and offline, especially among the female sample.

Overall, the tested mediation model suggested that body shame was both directly and indirectly (via body image control in photos) positively associated with adolescents' problematic

SNS use. Individuals who recognize a discrepancy between their body image and culturally idealized appearance might experience shame concerning their body (Dakanalis et al., 2015). Such individuals invest in photo-related activities and monitoring in an effort to present an ideal appearance when sharing self-images on SNS (McLean et al., 2015). Self-objectification which is closely related to body shame might be elicited and encouraged by the typical one-to-many style of interactions that SNS promote, and the exposure of an individual's own photos to the viewing of them by their peers (Manago et al., 2015; Vandenbosch & Eggermont, 2012). Due to this kind of communication, it is likely that SNS users become more vigilant about their appearance, picture quality, the self-image promoted online as well as strategies to taking, choosing, and editing their shared photos online (Boursier & Manna, 2019; Manago et al., 2015; McLean et al., 2015).

Rudd and Lennon (2000) stated that feelings of shame related to physical appearance could promote higher engagement in several behaviors of body improvement (such as body image control in photos) to improve their acceptance and achievement of social goals (Fox & Vendemia, 2016), often normalizing risky behaviors. Therefore, how individuals interact with their pictures prior to posting them on SNS appears to be strongly associated with body image-related issues and to problematic social networking (Cohen et al., 2018). This is because social reward and approval are pivotal motivators of adolescents' behavior (Bell et al., 2018; Foulkes, & Blakemore, 2016). Similarly, Rodgers and colleagues (2013) showed that individuals with a high level of body image concerns were particularly vulnerable to problematic internet use.

In this regard, the mediation model in the present study partially confirmed Hypothesis 1. Indeed, it partially shows a direct effect of body shame on problematic SNS use. More specifically, feelings of body shame directly predicted only problematic SNS use as a mood

regulator and negative outcomes resulting from their misuse in both male and female subsamples. Among male adolescents, body shame also directly predicted cognitive preoccupation. Likely, adolescents who feel ashamed of their bodies avoid body image-based SNS to hide themselves, using them only to manage their mood and anxiety about self-presentation in interpersonal situations with consequently negative outcomes (Caplan, 2007). Moreover, young men who feel ashamed about their bodies appeared more engaged in obsessive thinking patterns related to social networking.

However, body shame strongly predicted photo investment and control, leading to problematic social networking in both male and female groups, but with higher effects among young women (Hypothesis 2). This higher relevance of associations between body shame and problematic social networking in female adolescents might confirm the self-objectification framework's assumption that women, more than men, compare their bodies with cultural body standards, with consequent greater internalization and perception of these standards as a personal choice (Grabe, Hyde, & Lindberg, 2007; McKinley & Hyde, 1996). Consequently, the impossible total compliance with beauty cultural standards might enhance female adolescents' feelings of shame. Overall, the asynchronous nature of SNS seems to facilitate editing and provide greater control over online self-presentation (Casale & Fioravanti, 2017; Fox & Vendamia, 2016). According to Casale and Fioravanti (2017), individuals who feel body shame might display problematic SNS use responding to their need to control self-presentation and facilitate social acceptance.

Traditionally, research utilizing the objectification theory framework (Frederickson & Roberts, 1997) has proposed the predictive role of SNS use on self-objectification processes (Bell et al., 2018; Butkowski et al., 2019; Cohen, Newton-John, & Slater, 2017; De Vries &

Peter, 2013, Fardouly et al., 2015; Fardouly et al., 2018; Feltman & Szymanski, 2018; Holland & Tiggemann, 2016; Manago et al., 2015; McLean et al., 2015; Tiggemann & Barbato, 2018; Vandenbosch & Eggermont, 2012). Nevertheless, as Veldhuis and colleagues (2020) stated, investigating the potential impact of self-objectification and objectified body consciousness upon SNS use could complement previous studies in this field. Consistent with Strelan and Hargreaves' (2005) circle of self-objectification, the present findings strengthen the plausibility of the bidirectional nature of SNS↔self-objectification pathway. Self-objectification and SNS use appear to mutually affect and reinforce each other. Consequently, self-objectification not only represents an outcome of SNS use, but also could motivate individuals to engage in SNS use (Veldhuis et al., 2020), but not without negative effects. It is likely that SNS use leads to more self-objectification because it offers individuals who already self-objectify to present, manage, and promote their own images online, reinforcing self-objectification processes (Bell et al., 2018; Fardouly et al., 2015, 2017; Veldhuis et al., 2020), and could potentially lead to problematic SNS use. Further experimental research is needed to clarify and establish causal relationships between self-objectification and SNS use.

Practice implications

The present study's findings demonstrated the strong association between body shame and control of body image in online and offline environments. More specifically, adolescents who feel ashamed of their bodies (due to the discrepancy between their real body image and culturally promoted standards) appear to actively turn to strategies aimed at controlling their body image in photos. Furthermore, the present study showed the unexplored effect of body shame and body image control in photos on problematic SNS use.

As noted by Rudd and Lennon (2000), adolescents deal with the same typical identity

issues that they have always faced, but with an increasing centrality on the body as never before.

Thus, the growth of social media platforms makes the issue as a whole extremely contemporary.

In this regard, this realization can help psychologists better counsel adolescents about their

integration and mentalization of a changing body, the potentially related body shame, the pivotal

role of the enhancement and approval from peers, and how their social media use may be

affected by the relationship with own body image. The present findings might also help to direct

future research, especially in regard to intervention programs. Indeed, they might help teachers

and educational operators to define school-based programs to promote a conscious use of

personal visual content on SNSs. As previous studies highlighted (Fardouly et al., 2017;

McLean, Paxton, & Wertheim, 2016), media literacy programs are needed to educate adolescents

about their real body image, about culturally and peer-to-peer promoted body standards, and

about their sharing of photos on SNS. The psychologists' and clinicians' attention toward

adolescents' digitally generated self-images on social networking sites (King, 2016) appears

absolutely necessary.

Limitations and future directions

Some limitations of the present study also need to be addressed. First, the study used a

self-report survey with its well-known potential method biases ranging from a misunderstanding

of measures' purposes to social-desirability bias (Rosenman, Tennekoon, & Hill, 2011). Second,

the cross-sectional design limited the ability to formally test causality of the data. In fact,

problematic SNS use and self-objectification experiences might mutually affect and reinforce

each other, according to Strelan and Hargreaves (2005) and the bidirectional nature of social

networking-self-objectification relationship. Adolescents who are particularly ashamed about

their appearance might be more engaged in body image-focused activities on SNS and, at the

same time, social networking might promote adolescents' body shame and concerns due to the constant peer-to-peer comparison that SNS provide (Chen et al., 2019; Perloff, 2014). Third, the present study explored only a small number of variables in relation to the complex construct of problematic SNS use. Other aspects should be explored alongside the variables investigated here. For example, photo manipulation and editing could be explored in association with body shame and problematic SNS use.

Conclusion

The previously unexplored association between body shame and problematic social networking has been confirmed in the present study. Specifically, adolescents who feel ashamed of their bodies because of the perceived discrepancy between their appearance and culturally promoted standard appear to be engaged in strategies of control over their body image in photos. Furthermore, the present findings showed that body shame and body image control in photos strongly influence problematic social networking, contributing to both the self-objectification research field and the ongoing debate on possible predictors of problematic SNS use. Finally, despite the higher relevance of the relationship between body shame and problematic SNS use among female adolescents, similar findings among male adolescents might suggest that they are increasingly becoming engaged in self-objectification experiences.

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Table 1

Correlations among study variables

						Correlations					
Variables	1	2	3	4	5	6	7	8	9	10	11
1 OBCS body shame	--	.198**	.177**	.345**	.148**	.313**	.140**	.279**	.143**	.155**	.158**
2 BICP selfie-related factors	.218**	--	.259**	.461**	.292**	.565**	.123*	.310**	.456**	.394**	.122*
3 BICP privacy filter behaviors	.224**	.355**	--	.277**	.274**	.249**	.158**	.248**	.134**	.170**	.197**
4 BICP positive body image factors	.321**	.350**	.282**	--	.241**	.554**	.174**	.343**	.319**	.301**	.174**
5 BICP sexual attraction factors	.327**	.301**	.228**	.426**	--	.261**	.176**	.189**	.252**	.231**	.267**
6 BICP negative body image factors	.396**	.527**	.235**	.463**	.417**	--	.206**	.312**	.413**	.342**	.146**
7 PSNSU preference for online social interactions	.258**	.238**	.311**	.146*	.234**	.223**	--	.414**	.344**	.337**	.408**
8 PSNSU mood regulation	.207**	.297**	.315**	.080	.031	.221**	.515**	--	.401**	.455**	.329**
9 PSNSU cognitive preoccupation	.281**	.343**	.346**	.188**	.055	.224**	.425**	.591**	--	.784**	.337**
10 PSNSU compulsive social network sites use	.178**	.289**	.360**	.095	.024	.206**	.488**	.640**	.710**	--	.452**
11 PSNSU negative outcomes	.321**	.198**	.194**	.273**	.337**	.270**	.391**	.202**	.186**	.324**	--

Note. Male adolescents' data are reported below the diagonal; female adolescents' data, above the diagonal. OBCS = Objectified Body Consciousness Scale; BICP = Body Image Control in Photos; PSNSU = Problematic social network site use.

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 2

Descriptive statistics and gender comparisons for study variables

Variables	Total sample M (SD) [95% CI]	Male adolescents M (SD) [95% CI]	Female adolescents M (SD) [95% CI]	t	p	d
OBCS body shame	3.25 (.84) [3.191, 3.315]	3.16 (.76) [3.08, 3.244]	3.326 (.90) [3.230, 3.416]	2.52	.012	.19
BICP selfie-related factors	2.71 (1.09) [2.630, 2.793]	2.33 (1.04) [2.215, 2.450]	3.02 (1.04) [2.919, 3.122]	8.73	<.001	.66
BICP privacy filter behaviors	1.70 (1.08) [1.615, 1.777]	1.60 (1.06) [1.482, 1.71]	1.78 (1.09) [1.658, 1.886]	2.22	.026	.17
BICP positive body image factors	2.78 (.85) [2.713, 2.836]	2.68 (.88) [2.582, 2.773]	2.85 (.81) [2.774, 2.930]	2.78	.006	.21
BICP sexual attraction factors	1.68 (1.14) [1.604, 1.761]	2.03 (1.38) [1.871, 2.184]	1.40 (.81) [1.316, 1.482]	-7.49	<.001	.57
BICP negative body image factors	3.18 (1.19) [3.075, 3.263]	3.01 (1.27) [2.868, 3.155]	3.31 (1.11) [3.200, 3.427]	3.29	.001	.25
PSNSU preference for online social interactions	2.47 (1.50) [2.343, 2.583]	2.46 (1.50) [2.290, 2.632]	2.47 (1.51) [2.32, 2.621]	.10	.920	.01
PSNSU mood regulation	3.30 (1.77) [3.176, 3.425]	3.04 (1.78) [2.844, 3.256]	3.51 (1.73) [3.33, 3.686]	3.51	<.001	.27
PSNSU cognitive preoccupation	3.24 (1.85) [3.097, 3.387]	2.97 (1.77) [2.785, 3.179]	3.47 (1.89) [3.286, 3.655]	3.56	<.001	.27
PSNSU compulsive social network sites use	3.31 (1.94) [3.162, 3.453]	2.87 (1.79) [2.672, 3.069]	3.66 (2.00) [3.470, 3.86]	5.44	<.001	.41
PSNSU negative outcomes	1.97 (1.31) [1.877, 2.061]	2.22 (1.32) [2.078, 2.37]	1.76 (1.27) [1.630, 1.889]	-4.74	<.001	.36

Note. OBCS = Objectified Body Consciousness Scale; BICP = Body Image Control in Photos; PSNSU = Problematic social network site use. A Bonferroni correction was applied for the five tests for both the BICP and the PSNSU (*p* < .01).

Table 3

The mediated effect of body shame on problematic SNS use via body image control in photos for male and female adolescents

|	Male adolescents		Female adolescents	
	$\beta(SE)$	p	$\beta(SE)$	p
Body shame → body image control in photos → preference for online social interactions	.12(.028)	<.001	.12(.030)	<.001
Body shame → body image control in photos → mood regulation	.09(.032)	.004	.21(.033)	<.001
Body shame → body image control in photos → cognitive preoccupation	.12(.036)	.001	.29(.034)	<.001
Body shame → body image control in photos → compulsive SNS use	.11(.037)	.003	.25(.032)	<.001
Body shame → body image control in photos → negative outcomes	.11(.029)	<.001	.14(.032)	<.001
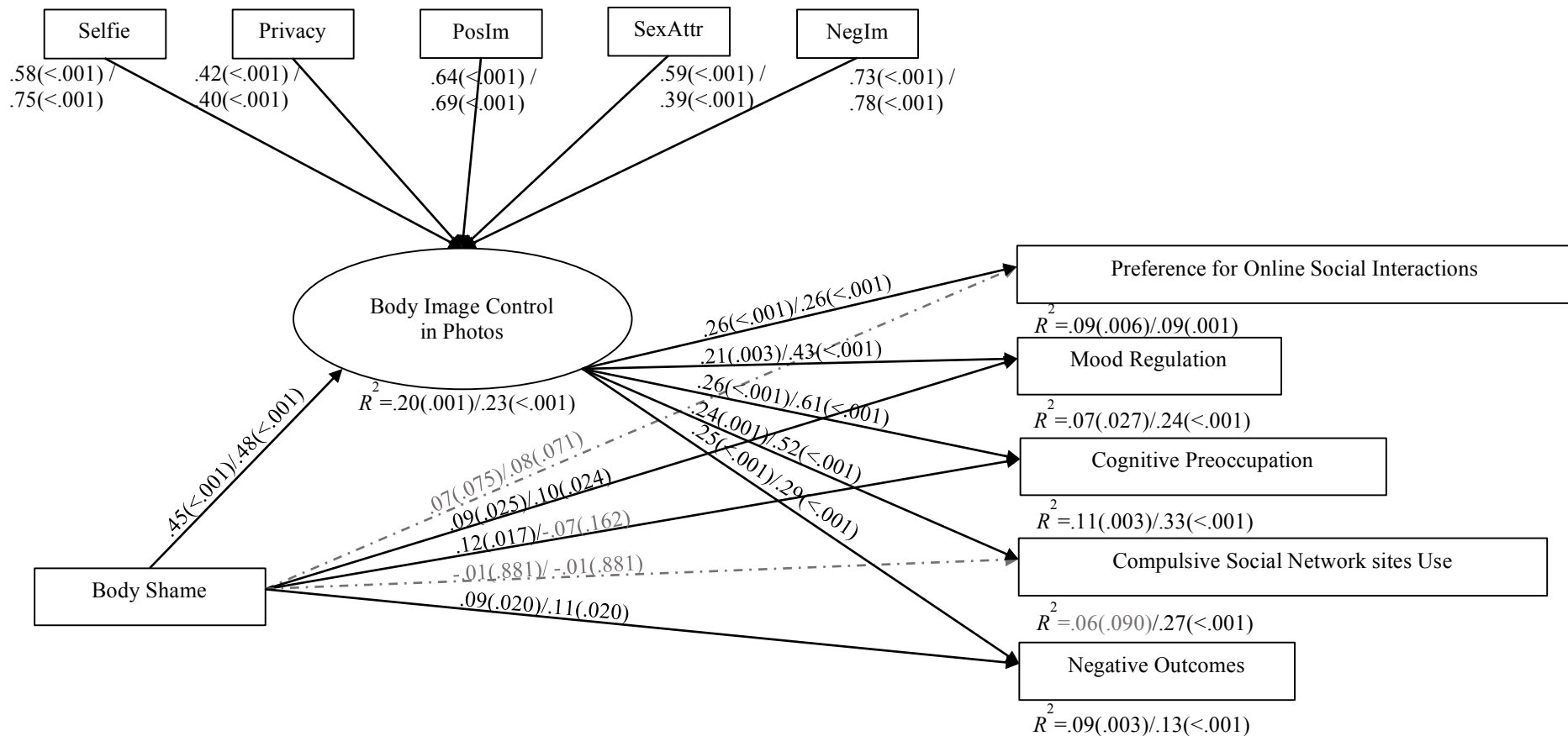
Figure 1. The mediation model with standardized path coefficients for male and female subsamples, *p*-values in parentheses, and the explained variance of the endogenous variables (R^2). Regression path coefficients for the male group are indicated first/for the female group, second. The mediator variable is a latent variable. All significant coefficients are indicated in black. Solid arrows indicate significant path coefficients ($p <$ .05); dashed paths, nonsignificant path coefficients. Selfie = Selfie-related factors subscale; Privacy: Privacy filter behaviors subscale; PosImm = Positive body image factors subscale; SexAttr = Sexual attraction factors subscale; NegIm = Negative body image factors subscale.