Social Network Sites, Friends, and Celebrities: The Roles of Social Comparison and Celebrity Involvement in Adolescents’ Body Image Dissatisfaction

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Abstract
This study applies the social comparison theory to examine the effects of adolescents’ engagement in comparison with friends and celebrities on social network sites (SNSs) on (a) their body image dissatisfaction (BID) and (b) their drive to be thin (DT) or muscular (DM). The study also examines celebrity involvement as an antecedent of the outcome variables. Data were collected through a survey of 1,059 adolescents in Singapore. Regression analyses indicate that SNSs use was related to adolescents’ BID. Specifically, social comparison with friends on SNSs was significantly associated with adolescents’ BID, DT, and DM. Gender differences were also observed—social comparison with celebrities was significantly associated with BID and DT among female adolescents. Celebrity involvement was significantly associated with male BID. Theoretical and practical implications were discussed.

Keywords
social media, social comparison theory, body image, adolescents, media effects

The prevalence of body image dissatisfaction (BID) and the drive to achieve idealized body types among adolescents have largely been attributed to the frequent depictions of unrealistic beauty in the mass media (Lwin & Malik, 2012). BID and the drive to achieve the perfect body may pose a serious threat to adolescents’ health as they are associated with the development of various eating disorder symptoms (Anschutz, Van Strien, & Engels, 2008; Brumberg, 1992). In today’s media environment, where images of ideal body types are made more pervasive through the use of social network sites (SNSs) such as Facebook, Twitter, or Instagram, it is pertinent for research to focus on how SNSs facilitate social comparison, which is an antecedent of BID and the drive to achieve an idealized body.

The technological affordances for interpersonal surveillance and interaction of SNSs may facilitate social comparison due to the greater exposure to ideal body postings by peers as well as celebrities—who are often sources of BID (Jefferson & Stake, 2009; Krcmar, Giles, & Helme, 2008). Currently, research on social comparison through SNSs and the development of BID is considerably nascent (Perloff, 2014) and there are three existing gaps in the literature. First, many studies on SNSs are primarily focused on the effects of the manipulation of media images (e.g., Hargreaves & Tiggemann, 2009) and few have accounted for how social comparison with adolescents’ peers and favorite celebrities on SNSs’ influence outcomes of BID and the drive to achieve an idealized body shape. Second, as SNSs promote interactivity, they also facilitate celebrity involvement as adolescents have the opportunities to follow their favorite celebrities. Third, existing studies did not account for the fact that most body-image literature are predominantly focused on media’s influence on women, while studies comparing differences between media’s influence on women and men are comparatively lesser (Nikkelen, Anschutz, Ha, & Engels, 2012).

Therefore, we seek to address these gaps by setting out to achieve three objectives. First, using social comparison as the theoretical framework, we seek to understand how adolescents’ social comparison with friends and celebrities on SNSs...
relate to (a) BID and (b) the drive to achieve ideal body types—specifically the drive to achieve thinness (DT) for females\(^2\) and the drive to achieve muscular bodies (DM) for males.\(^3\) Next, we examine how adolescents’ use of SNSs for celebrity involvement relate to the two outcome variables. Third, we examine whether there are gender differences in the social comparison processes and their association with the two outcome variables.

**Concepts of Interest—BID and DT/DM**

The first concept of interest—BID—is a negative assessment of an individual’s body with regard to size, shape, weight, or muscularity (Grogan, 2007) and it is a function of the discrepancy between a person’s idealized body type and their perceived body image (Silberstein, Striegel-Moore, Timko, & Rodin, 1988). As for the second concept of interest—adolescents’ drive to achieve ideal body types—it is defined as the preoccupation to engage in behaviors to actualize one’s ideal body (Bergeron & Tylka, 2007). Particularly for females, DT is the focus as the female body shape in the media has undergone great shifts toward thinness over time (Wasylikw, Emmes, Meuse, & Poirier, 2009). This contributes to the increase in women’s over-adaptive behaviors to conform to contemporary body image ideals; research has shown that exposure to thin images by the media has a small to moderate effect size on BID and eating habits (Anschutz et al., 2008; Grabe, Ward, & Hyde, 2008).

While thinness is the main ideal body type for women, muscularity which is characterized by large biceps, broad shoulders, and a V-shaped body is arguably the predominant body ideal for men (Furnham, Badmin, & Sneade, 2002). Male muscularity featured in media platforms such as television and men’s magazines has steadily increased over the years (Labre, 2005) and exposure to such images and internalization of such ideals will motivate DM (Blond, 2008; Daniel & Bridges, 2010).

**Theoretical Framework—Social Comparison**

To find out the antecedents of BID and the drive to achieve an idealized body, we adopt the social comparison theory as the guiding theoretical framework. The theory (Festinger, 1954) postulates that people engage in comparison with others to fulfill a basic human need for self-evaluation, in the absence of objective and non-social criteria. These comparisons are cognitive judgments people make about their own attributes against others whom they perceive as ideal goals (Sohn, 2009).

There are three types of social comparison (Festinger, 1954; Morrison, Kalin, & Morrison, 2004; Taylor & Lobel, 1989)—upward (comparison with others who are perceived to be better), downward (comparison with the less fortunate), and lateral comparison (comparison with similar others). Research on BID typically focused on lateral comparison (comparison with peers) and upward comparison (e.g., comparison with celebrities/fashion models via mainstream media)—studies have demonstrated that both upward and lateral social comparison are positively associated with BID and the drive to achieve an ideal body for both genders (Bessenoff, 2006; Jones, 2001; Morrison et al., 2004).

Hence, we choose to focus on friends (lateral comparison) and celebrities (upward comparison) as targets of adolescents’ social comparison in this study. Understanding how adolescents engage in social comparison with peers is an integral part of the social comparison theory as it postulates that individuals are innately inclined to compare with similar others and one’s peers provide the most reliable and stable evaluation of themselves (Festinger, 1954; Taylor & Lobel, 1989).

Apart from friends, celebrities are also important referent targets for adolescents as they tend to look to media figures as role models (Giles & Maltby, 2004). In addition, later revisions of the social comparison theory acknowledged that apart from similar others, people tend to also compare themselves with those who are perceived to be better such as celebrities,\(^4\) who are perceived to be standard bearers of beauty (Prieler & Choi, 2014).

**Affordances of SNSs for Social Comparison**

In today’s highly mediated environment, where the majority of adolescents’ peers and celebrities have an online presence on SNSs, the SNSs’ platform serves as a comparison incubator that provides greater affordances for social comparison with their peers and celebrities (Perloff, 2014). SNSs, such as Facebook or Twitter, can be defined as websites or applications that allow users to (a) construct a public or semi-public profile, (b) add links to peers and those whom they want to follow, and (c) view and navigate through their immediate networks to a wider community (boyd & Ellison, 2007). Over the years, SNSs has become increasingly popular especially among adolescents. A total of 81% of Internet users aged 12–17 years use SNSs and 67% of them visit SNSs daily (Madden et al., 2013).

In Singapore, Internet and smartphone penetration rates are the highest in Asia, with 87% having access to the Internet (InfoComm Development Authority of Singapore, 2015). SNSs’ penetration rate in Singapore is 59%, which is twice the global average of 26%—an average Singaporean spends about 2.2 hr/week on SNSs (Mohd, 2014). Similar to the western profile, Facebook, YouTube, Twitter, and Instagram are the most popular SNSs in Singapore (Hashmeta, 2014) and most Singaporean Internet users aged 7–24 years identified social networking as their primary online communication activity (InfoComm Development Authority of Singapore, 2012).

There are three unique affordances of SNSs that facilitate social comparison that may be different from traditional...
media platforms (Blomfield Neira & Barber, 2014). First, SNSs represent social information sources that facilitate self-presentation and self-promotion (Van Dijck, 2013). Particularly, there is an increased usage of self-portraits (known as selfies) on SNSs (D. C. Murray, 2015). To ensure that one presents the best image of himself or herself, selfies can be taken multiple times to capture the “right” angle (Hess, 2015), ensuring that only the positive attributes of the individual are made salient.

Second, SNSs allow adolescents to receive a constant flow of information (e.g., status update, picture and video sharing, tagging, and newsfeed) from friends as well as celebrities they follow, at any given time as long as they have Internet access on a smartphone, laptops, and desktop computers (Perloff, 2014). Therefore, compared to the traditional media environment where exposure to content is limited by physical access to material or screen time (e.g., having access to fashion magazines or watching television), the new media environment offers adolescents greater exposure to idealized body in the form of friends’ edited profile picture or celebrities’ latest photos (Ansdager, 2014).

Third, as content delivered over SNSs is considerably personalized, users ascribe a higher perceived realism to the content, which may bypass cerebral scrutiny and diminish persuasion defense mechanism (Perloff, 2014). For instance, a selfie serves as an authentication of one’s “self” in “real” situations (Hess, 2015; Lobinger & Brantner, 2015). Individuals may be likely to construe friends’ or celebrities’ posts such as after-workout selfies or glamor profile pictures as more realistic as compared to mass media’s depictions of idealized body types. This is because, for the latter, there is an awareness that photos or videos are substantially edited by professionals but for the former, the act of posting is akin to self-disclosure, which activates the suspension of disbelief.

**Social Comparison, BID, and the Drive to Achieve Idealized Body**

As adolescents are given more opportunities to view what their peers and celebrities are doing, it facilitates greater social comparison, which can be an antecedent to BID and the drive to achieve an ideal body. Existing literature has largely supported this—adolescents who engaged more frequently in attractiveness and weight comparisons with peers and celebrities felt more negatively about their body image for both males and females (Hargreaves & Tiggemann, 2009; Jones, 2001; Wood & Taylor, 1991).

However, research has suggested that social comparison and BID may be different for genders. First, a meta-analytic review has indicated that the effect of social comparison on BID is stronger for women than men (Myers & Crowther, 2009). Second, scholars have highlighted that women’s actual–ideal discrepancy is influenced by both lateral and upward social comparison, while men’s actual–ideal discrepancy is only influenced by lateral comparison with peers (Sohn, 2010).

Furthermore, studies have demonstrated gender differences in the purposes and effects of SNS usage (Haferkamp, Eimler, Papadakis, & Kruck, 2012). In a Pew Research Center survey, 54% of women cited “seeing photos or videos” as a reason for using Facebook as compared to 39% of men (Smith, 2014). Women also prioritize highlighting physical attractiveness through their Facebook photos (Manago, Graham, Greenfield, & Salimkhan, 2008), while men prefer highlighting non-physical attributes such as their intelligence and wit in self-promotional profile content (Mehdizadeh, 2010). This indicates that women place more importance on the self-presentation and interpersonal aspects of SNS use and as such they tend to engage in greater lateral social comparison when viewing others’ Facebook profiles than men (Haferkamp et al., 2012). Past research has also found a link between exposure to Facebook pictures and BID for women (S. H. Thompson & Lougheed, 2012).

While research has largely supported that social comparison with peers and celebrities are associated with BID and the drive to achieve an idealized body, findings on the direction of gender differences in social comparison and the two outcome variables are inconclusive (Knauss, Paxton, & Alsaker, 2007; Xu et al., 2010). In addition, most BID scholarship has focused on women, even though there is an increasing number of studies that show that it is relevant for men (Blond, 2008). Thus, we propose the following hypotheses that investigate the relationship between social comparison with peers and celebrities with adolescents’ BID and the drive to achieve idealized body and how it differs among male and females:

**H1.** Social comparison with friends on SNSs is positively associated with (a) BID and (b) the DT or DM.

**H2.** Social comparison with celebrities on SNSs is positively associated with (a) BID and (b) the DT or DM.

**Celebrity Involvement**

Apart from the affordances for social comparison, one other important trait of SNSs is that it promotes interactivity by giving autonomy to users to become active participants. Instead of being passive receivers of content over SNSs, users have the autonomy to decide who they want to follow and to be in their network, shape online communication, and engage in content creation (Perloff, 2014). This level of interactivity may empower users as they are able to communicate with their favorite celebrities on an interpersonal level (Frederick, Lim, Clavio, & Walsh, 2012)—this is vastly different from the pre new-media age where perceived intimacy with celebrities are often one-sided and occurs at a distance (Horton & Wohl, 1956; Rubin & McHugh, 1987)—known also as parasocial interaction (PSI). In addition, many celebrities are using SNSs to reach out to fans and to create favorable impressions of themselves (Utzi, 2009).

The original conceptualization of PSI refers to a one-sided imagined relationship between media users (particularly
Even though early PSI literature was rooted in television studies, research has shown that the concept can be mapped onto online environments (Labrecque, 2014). First, many celebrities have adopted SNSs to connect directly with their fans (Marwick, 2015). Second, SNSs enable celebrities to create a sense of intimacy with their followers through posting snapshots of their daily lives that may be perceived as authentic, addressing rumors and even disclosing highly personal details, while at the same time keeping an unequal and asymmetrical communication pattern with fans (Marwick, 2015; Marwick & boyd, 2011).

Engagement and celebrity involvement can influence people’s body image attitudes. Shorter, Brown, Quinton, and Hinton (2008) found that one’s favorite celebrities influence women’s body image by serving as unrealistic targets of social comparison. Participants who reported higher perceived body image discrepancy between themselves and their favorite celebrities also rated higher on disordered eating attitudes and behaviors. People who are more emotionally attached to and involved with their favorite celebrities may experience greater BID and the drive to achieve idealized body types. Hence, we postulate the following:

**H3.** Celebrity involvement is positively associated with (a) BID and (b) the DT or DM.

### Method

A pen-and-paper survey was conducted from 22–28 August 2013 with 1,059 adolescents from a public secondary school in Singapore. The sample comprises the school’s entire student population, excluding students who did not consent to participate in the survey. The pen-and-paper method was chosen to facilitate supervision of the survey administration, such that teachers and research assistants on site can answer students’ questions about the questionnaire in a timely way. Participants were 567 boys and 492 girls aged 12–19 years. The average age of the female participants was 14.78 years (standard deviation [SD] = 1.49) and 14.70 years (SD = 1.42) for males. Participants’ reported height and weight were used to calculate their Body Mass Index (BMI). The average BMI was 20.19 (SD = 4.23) for females and 21.1 (SD = 5.90) for males. These values are within the normal healthy range.

The study received approval from the Institutional Review Board at the university in which it was based and the Singapore Ministry of Education to collect data in the public school. Participants were recruited via a letter that was distributed along with a consent form to the parents of the students. Students who received parental consent completed the questionnaire in a supervised classroom setting within the school during the data collection period, while others were asked to complete an alternative task. Students could also personally decline participation in the study. Out of 1,156 students who were ultimately eligible for participation, 1,059 agreed to participate in the survey, yielding a participation rate of 91.5%.

### Measures

Two versions of the questionnaire were created for females and males, which differed in terms of the scales that were used to measure female and male BID and DT/DM. Questions on age, BMI, and education level functioned as control variables during data analysis. Participants’ responses to the items of each scale were averaged to create a composite measure representing each variable.

**Attention to Mass Media and the Internet.** Studies have shown that different media can have different impacts on adolescents’ attitude and online behavior (Chen, Ho, & Lwin, 2016; Ho, Poorisat, Neo, & Detenber, 2014; Lwin, Ho, Jung, Theng, Kim, & Wardoyo, in press). To control for the influence of attention to mass media and the Internet on the outcome variables, participants reported on a 7-point scale (1 = no attention at all and 7 = very close attention) their attention to different content genres from various media channels. Participants rated their level of attention to the Internet in terms of (a) SNSs, (b) blogs, (c) forums, (d) videos, (e) entertainment/celebrity news/gossip websites or blogs, (f) gaming, and (g) social news/entertainment sites with user-generated content (females: M = 3.63, SD = .99, Cronbach’s α = .71; males: M = 3.79, SD = .99, Cronbach’s α = .67). Participants reported their level of attention to television with regard to (a) reality shows, (b) dramas, (c) sitcoms, and (d) music videos (females: M = 4.36, SD = 1.33, Cronbach’s α = .70; males: M = 3.50, SD = 1.41, Cronbach’s α = .70).

Participants rated their level of attention to magazines of each content type: (a) fashion and lifestyle, (b) entertainment/celebrities, (c) health, and (d) teens (females: M = 3.82, SD = 1.54, Cronbach’s α = .79; males: M = 2.74, SD = 1.60, Cronbach’s α = .89). Participants reported their level of attention to music videos of various genres: (a) hip-hop/rap, (b) rhythm and blues (R&B), (c) pop, (d) dance, (e) rock, and (f) indie (females: M = 4.30, SD = 1.31, Cronbach’s α = .81; males: M = 3.93, SD = 1.45, Cronbach’s α = .84).

**SNS Usage.** Participants indicated the average number of hours per day that they spent on their favorite SNS in the past week (females: M = 240.5 min or 4 hr, SD = 237.84; males: M = 191 min or 3 hr and 11 min, SD = 248.08.)
Social Comparison with Friends. To assess participants’ tendency to make appearance-related social comparisons, this study adapted four items from the Physical Appearance Comparison Scale (J. K. Thompson, Heinberg, & Tantleff, 1991). Participants indicated their agreement on a 7-point scale (1 = strongly disagree and 7 = strongly agree) with these statements: (a) “I tend to compare my physical appearance to the physical appearance of my friends when I see new photos they share on SNS”; (b) “I compare how I am dressed to how my friends are dressed when I see new photos they share on SNS”; (c) “The best way for a person to know if they are overweight or underweight is to compare their figure to the figure of their friends”; and (d) “I sometimes compare my figure to the figures of my friends when I see new photos they share on SNS.”

Social Comparison with Celebrities. Participants responded to similar statements with regard to celebrities (e.g., “When celebrities I follow on SNS share new photos, I tend to compare my physical appearance to their physical appearance” and “I sometimes compare my figure to the figures of celebrities I like when I see new photos they share on SNS.”) Higher scores on these two scales indicate greater tendency to engage in appearance-related social comparisons with others. Females scored an average of 3.45 (SD = 1.65, Cronbach’s α = .88) for social comparison with friends, and 2.82 for comparison with celebrities (SD = 1.52, Cronbach’s α = .89). Males scored an average of 2.67 (SD = 1.45, Cronbach’s α = .89) for social comparison with friends and 2.35 for comparison with celebrities (SD = 1.09, Cronbach’s α = .92).

Celebrity Involvement. Participants’ celebrity involvement was assessed using the Celebrity Attitude Scale (McCutch- eon, Lange, & Houran, 2002). Participants were prompted to indicate if they have a favorite celebrity (“yes” or “no”) and to name the celebrity if they do. They then indicated on a 7-point scale their agreement with 22 statements (1 = strongly disagree and 7 = strongly agree), including “I am obsessed by details of my favorite celebrity” and “I consider my favorite celebrity to be my soulmate.” Higher scores on the scale indicates greater celebrity involvement (females: M = 4.05, SD = 1.32, Cronbach’s α = .96; males: M = 3.30, SD = 1.07, Cronbach’s α = .96).

Female BID and DT. To measure females’ BID and DT, this study adapted two subscales from the Eating Disorders Inventory (EDI) (Garner, 2004; Garner & Olmstead, 1984) that assess body image attitudes (Podar & Allik, 2009). The BID subscale consists of nine statements including “I feel satisfied with the shape of my body”; and “I think my thighs are too large.” Higher scores on this scale indicate greater BID (M = 3.84, SD = 1.10, Cronbach’s α = .89). The DT subscale consisted of seven items (e.g., “I am preoccupied with a desire to become thinner”; and “I am terrified of gaining weight.”) Higher scores on this scale indicate greater DT (M = 3.45, SD = 1.37, Cronbach’s α = .91). Responses were measured on a 6-point scale (1 = never and 6 = always).

Male BID and DM. Male BID was assessed using the muscularity and body fat subscales of the Male Body Attitudes Scale (MBAS) developed by Tylka, Bergeron, and Schwartz (2005). The masculinity subscale comprises of ten items (e.g., “I think my shoulders are too narrow”; and “I think my back should be larger and more defined.”) and the body fat subscale comprises of eight items (e.g., “I think my abs are not thin enough”; and “I think my stomach is too flabby.”) Higher scores indicate greater BID (M = 3.27, SD = 1.04, Cronbach’s α = .92).

Male participants’ DM was assessed using the Drive for Muscularity Scale (McCreary & Sasse, 2000) comprising of 14 items (e.g., “I think I would look better if I gained 5 kilograms in bulk”; and “I think I would feel stronger if I gained a little more muscle mass.”) Higher scores on this scale indicate greater DM (M = 3.05, SD = 1.15, Cronbach’s α = .92). Participants responded to the above items on a six-point scale (1 = never and 6 = always).

Results

Separate hierarchical linear regression analyses were conducted for female and male adolescents using SPSS 20 to test the hypotheses. Variables used for analysis were entered in blocks according to their presumed causal order. The regression findings across both female and male samples are summarized in Table 1. BMI and age were entered into the first block as controls. Variables pertaining to attention to mass media and the Internet were entered into the second block. The study hypothesized that social comparison with friends (H1) and celebrities on SNSs (H2), and celebrity involvement (H3) will be positively associated with (a) BID and (b) DT/DM. These variables were simultaneously entered in the third and final blocks of the regression analyses. All in all, the regression models showed modest explanatory power for the dependent variables (DV)—it explained 40% of the variance of female BID and 24% of the variance of male BID. It also accounted for 32% of the variance of DT and 29% of the variance of DM.

Social comparison with friends on SNSs was a significant antecedent for all the dependent variables, namely, female BID (β = .35, p < .001), male BID (β = .29, p < .001), DT (β = .27, p < .001), and DM (β = .28, p < .001). Thus, H1 was supported. Social comparison with celebrities on SNSs was positively associated with female BID (β = .11, p < .05) and DT (β = .13, p < .05). However, the relationship between social comparison with celebrities and males’ BID and DM were not significant. As such, H2 received only partial support.

Finally, celebrity involvement was positively associated with BID among male adolescents (β = .11, p < .05) but not among females. Celebrity involvement was also not associated with DT and DM, indicating partial support for H3.
This study applied social comparison theory to examine how social comparison with peers and celebrities via SNSs, as well as celebrity involvement relate to young people’s BID and their drive to achieve idealized bodies. Notably, we found several key findings on the significant gender differences between how social comparison via SNSs as well as celebrity involvement relate to BID, DT, and DM.

First, our results showed social comparison with friends on SNSs to be a significant antecedent of BID, DT, and DM. Second, social comparison with celebrities on SNSs was only positively associated with females’ BID and DT; the relationship between social comparison with celebrities and males’ BID and DM were non-significant. Third, celebrity involvement was positively associated with males’ BID and DM. In summary, our findings suggest that comparing with peers on SNSs has a stronger relationship with BID and DT/DM than for celebrities.

Social comparison with friends on SNSs was significantly associated with BID as well as DT/DM for both genders in our study. This is consistent with past studies that have emphasized the influence of peers over thin or muscular ideal media exposure on BID (Clark & Tiggemann, 2006; Ferguson, Munoz, Contreras, & Velasquez, 2011). This finding lends partial support to our initial conjecture that the three unique affordances of SNSs—opportunities for self-presentation (e.g., manipulation of image through selfies), constant flow of information and perceived realism—play a crucial role in making social comparison salient and is associated with higher BID and DT/DM.

How do these affordances⁶ of SNSs make social comparison salient? The SNSs’ environment allows adolescents to experiment with visual manipulation and to curate appealing or highly sexualized images of themselves to gain popularity and attention (Manago, Ward, Lemm, Reed, & Seabrook, 2015; Seidman & Miller, 2013). As such, SNSs become a database where adolescents can constantly view their friends’ photographs, get a sense of what is attractive and what is not, and evaluate the level of their attractiveness against their peers (Livingstone, 2008). Even though adolescents may have awareness that their friends’ photographs are manipulated, there is still a sense of realism embedded in the photographs as visuals do provide a form of authentication of reality (Hess, 2015). Hence, adolescents may engage in social comparison with friends on SNSs as they believe that the level of attractiveness is more attainable as compared to celebrities (Fardouly, Diedrichs, Vartanian, & Halliwell, 2015).

While we see the effects of social comparison via SNSs with friends to be similar for both genders, social comparison with celebrities on SNSs was only positively associated with BID and DT for females. Scholars have highlighted the relatively stronger influence of idealized media images on females (Grogan, 2010; Smolak, 2004). After all, the media has established a clearer prescribed image of the societal ideal (thinness) for females as compared to males (McCabe & Ricciardelli, 2001), in which the perception of what the ideal male body is may not be uniform (Smolak & Murnen,

### Table 1. Hierarchical Regression Analyses of Adolescents’ Body Image Dissatisfaction and Drive to be Thin/Muscular.

| Independent variables | Body image dissatisfaction | Drive to be thin/muscular |
|-----------------------|---------------------------|--------------------------|
|                       | Girls (N=492) | Boys (N=567) | Girls (N=492) | Boys (N=567) |
| Pearson’s r β         | Pearson’s r β         |
| Block 1: demographics  | Block 2: general media attention | Block 3: celebrity involvement and social comparison on SNSs |
| BMI                   | .42*** .41*** .15*** .17*** .28*** .27*** −.01 .02 |
| Age                   | .02 −.03 .09* .07 −.03 .09 .18*** .22* |
| Education             | −.02 −.01 .08 −.06 −.06 −.15 .13*** −.14 |
| R² change             | .19 .03 .03 .09 .04 |
| Internet              | .14*** .16** .01 .14*** .07 .18*** .18** .02 |
| Television            | .13*** .17** −.05 .19*** −.01 .25*** −.01 |
| Magazines             | .20*** .28** .12* .34*** .19*** .39*** .20*** |
| Music videos          | .22*** .14** .26*** .15*** .23*** .10* .31*** .16*** |
| R² change             | .06* .11* .12* .17*** |
| Comparison with friends on SNSs | .46*** .35*** .40*** .29*** .42*** .27*** .44*** .28*** |
| Comparison with celebrities on SNSs | .35*** .11* .26** .02 .37*** .13* .31*** .05 |
| Celebrity involvement | .14*** −.03 .25*** .11* .19*** .01 .24*** .06 |
| R² change             | .15*** .10*** .11* .09* |
| Total R²              | .40*** .24*** .32*** .29*** |

BMI: body mass index; SNS: social networking site.

***p < .001; **p < .01; *p < .05.
2008). Moreover, some have suggested that not all men define muscularity only as a physical attribute—some view non-physical attributes such as intelligence as the modern muscularity (Lwin & Malik, 2012).

In addition to how social comparison with friends and celebrities relate to BID, DT, and DM among males and females, the gap between the mean scores of social comparison with friends and celebrities among men (comparison with friends: \(M = 2.67\); comparison with celebrities: \(M = 2.35\)) was smaller than the differences for women (comparison with friends: \(M = 3.45\); comparison with celebrities: \(M = 2.82\)). This indicates that females engaged in more social comparison on SNSs as compared to males—this is consistent with past research that showed that women predominantly use SNSs for social comparison purposes (Haferkamp et al., 2012). In addition, females were more likely to engage in social comparison with peers as compared to celebrities. This may be due to peers being important referent groups for female adolescents to evaluate their appearances and thus judge how they fit in (Jones, 2001).

Finally, we hypothesized that celebrity involvement is associated with BID and DT/DM. For adolescent males, this relationship was only significant for BID but not DM. The significant relationship between celebrity involvement and BID is consistent with research that found that exposure to idealized male bodies is associated with BID (Arbour & Martin Ginis, 2006)—after interacting with celebrities that may have a better looking body, male adolescents may feel worst about their bodies and thus develop BID. However, celebrity involvement is not significantly associated with males’ DM because a more profound and longer term exposure is required for males to develop DM (Hobza & Rochlen, 2009).

As for females, the non-significant associations between celebrity involvement and BID/DT can be understood by accounting for the degree of celebrity involvement—there is a distinction in existing literature between involvement and intense personal celebrity worship. Past research have shown that it is the latter among females that is associated with BID (e.g., Shorter et al., 2008).

This study has a few limitations that future research can improve upon. First, the interpretation of the findings may be limited by the use of convenience sampling. Second, we acknowledge that one implicit assumption is that celebrities have a strong SNSs’ presence—however this may not be so. Besides, even if celebrities have a strong SNSs’ presence, their online activities may be more text-driven (e.g., tweets) than image-driven. As such, social comparison’s effects with celebrities could differ based on the celebrities’ SNSs’ activities. Next, we did not ask if the participants’ favorite celebrities were male or female—it is likely that girls whose favorite celebrities are males will neither compare their body image with them nor develop BID or DT/DM because of the comparison. Finally, we also did not ask if which platforms the participants used for what purpose and if their favorite celebrities were on SNSs.

For future studies, we recommend that scholars may want to examine how celebrities’ level and type of SNSs’ use (e.g., tweet-only condition, selfie only condition, and both conditions) moderate the effects of females’ social comparison with celebrities and their relationship with BID and DT. Second, researchers may want to investigate why celebrity involvement relates to BID only for males but not for females. Third, scholars may want to distinguish between different dimensions of social comparison with friends (e.g., comparing with friends in offline setting vs comparing with friends’ images in an online setting) and how they relate to BID, DT, or DM.

All in all, we contribute to media effects and body image research by focusing on SNSs as a new medium that can generate BID among adolescents. This study extended the social comparison theory to the context of SNSs, and highlighted how the unique affordances of SNSs such as self-presentation manipulation, uninterrupted flow of information, as well as perceived realism facilitate social comparison with friends and celebrities and the consequential effects on adolescents’ BID and their drive to achieve an ideal body. In addition, we found that celebrity involvement has a limited relationship with BID, in which a significant association was only found for males.

Our findings yield practical implications for policymakers and educators seeking to anticipate and respond to the outcomes of SNSs’ use with regard to adolescents’ psychological well-being. Education programs aiming to promote cyber wellness among adolescents should address their tendencies to engage in social comparison with their friends on SNSs. Educators can create and communicate content that reinforces adolescents’ awareness of how people curate their self-image online and debunk their beliefs that others’ lives on SNSs necessarily mirror that of real life. This may encourage adolescents to understand, be mindful of, and learn to cope with individuals’ natural drive to compare themselves with others in various aspects including physical appearance.

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Notes
1. In this study, adolescents are defined as teenagers between the ages of 12 and 18—this is consistent with existing research on adolescents and BID (e.g., Harrison & Hefner, 2014).
2. We chose to focus on the drive to be thin (DT) for women and muscularity (DM) for men because in line with research on objectification theory, a muscular body is preferred by men
but less so for women (Oelhof, Musher-Eizenman, Neufeld, & Hauser, 2009; Smolak & Murnen, 2008). This is also consistent with the bulk of research that showed that thinness is women’s ideal body shape while masculinity is one of the body ideals for men due to social–cultural and media influences (Bessenoff, 2006; Prieler & Choi, 2014).

3. We acknowledged that masculinity is not the only type of ideal body offered for men by the media as studies have shown that some males do see thin bodies as their ideal (e.g., Fernandez & Pritchard, 2012). However, we chose to focus on the DM for males due the following three reasons: (a) there are increasing depictions of masculinity in the media (Hargreaves & Tiggemann, 2009); (b) traditional media platforms (e.g., magazines) still emphasize masculinity as the ideal body for men (e.g., Labre, 2005); and (c) most men predominantly report a preference for masculinity (S. B. Murray & Touyz, 2012).

4. We define celebrities as personalities featured in the mainstream media, with a significant amount of popularity and following, in which there is a certain level of commodification of the person through publicity or advertising (Marwick & Boyd, 2011; Turner, 2004). There are many types of celebrities and they include a diverse range of people from sports, entertainment (e.g., actors and models), or music industries. We note that there is a distinction between traditional celebrities and microcelebrities, even though they share many similarities (Marwick & Boyd, 2011; Senft, 2008). Microcelebrities are essentially self-made well-known personas whose popularity is derived from online self-branding through pictures, or videos, while celebrities are popular due to their works (e.g., music and acting) offline (Marwick, 2015). Second, microcelebrities are people who are famous to a niche group of people, while celebrities’ popularity spans across larger groups of audiences (Marwick, 2013).

5. Media figures are defined as actors, presenters, as well as celebrities (Giles, 2002).

6. Boyd (2010) highlighted four structural affordances of social network sites (SNSs)—(a) persistence (the automated archiving of online content), (b) replicability, (c) scalability, and (d) searchability. These structural affordances can facilitate social comparison as well. For instance, the automated archiving of online content (persistence) makes it easy for adolescents to come across friends’ pictures when they engage in social surfing (searchability). In addition, if a particular pose in a photograph is perceived to be attractive and popular (e.g., taking a selfie from a high angle to achieve a thinner look), adolescents can easily recreate (replicability) the actions (Marwick, 2015) which may potentially go viral and reach a large audience (scalability).

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