

THE EFFECTS OF ACTIVE SOCIAL MEDIA ENGAGEMENT ON EATING DISORDER
RISK FACTORS IN YOUNG WOMEN

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ABSTRACT

This study examined how engaging with female peers on social media affects young women's body image and self-esteem. Participants were 90 female undergraduate students. Fifty participants left comments on photos of one of their own subjectively more attractive acquaintances and interacted with her social media profiles for 10 minutes. The other 40 participants completed the same procedure with a family member they did not consider more attractive than themselves. Women who had engaged with attractive acquaintances had lower state self-esteem and body image than those who had engaged with family members on social media. Self-evaluative salience of appearance investment, drive for thinness, and downward (but not upward) physical appearance tendencies moderated various relationships between condition and self-esteem and body image. The findings reveal active social media engagement is causally related to eating disorder risk factors in young women, and young women with certain traits are more susceptible to such effects.

DEDICATION

I dedicate this work to all the women, young and old, who have struggled with body image issues and/or eating disorders. My hope is that my work will help women learn to appreciate their bodies not as ornaments but as vehicles to their best lives.

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The Effects of Active Social Media Engagement on Eating Disorder Risk Factors in Young Women

Social media use has reached enormous proportions worldwide: Seventy-nine percent of Internet-using adults use Facebook, 1.28 billion people are daily Facebook users, and more than 700 million people use Instagram, a rapidly growing photo-based social media application, monthly (Duggan, Page, & Greenwood, 2016; Facebook, n.d.; Instagram, 2017; Statista, 2017). There is high overlap between these platforms: Most Instagram users also use Facebook (Duggan et al., 2016). Social media are especially popular among young adults. In 2016, 88% of online 18-to-29-year-olds used Facebook and 59% used Instagram (Duggan et al., 2016). Females are more likely than males to use Facebook and Instagram (Duggan et al., 2016). As social media usage is a relatively new phenomenon in human behaviour, the psychological implications are not fully understood.

Given the immense popularity of social media, especially with women, among whom body dissatisfaction has been described as normative, it is important to understand the psychological underpinnings of how and for whom social media impacts users (Grogan, 2016; Rodin, Silberstein, & Striegel-Moore, 1985). Unlike traditional forms of media like television, movies, and magazines, social media sites are designed to actively engage the user. Individuals can look at their contacts' (often referred to as "friends" in the social media realm) social media profiles, can indicate that they "like" friends' posts/photos, and comment on friends' posts/photos. On Facebook, there is now also an option to "react" to posts by clicking on icons that indicate reactions such as anger, sadness, surprise, laughter, or love. Collectively, these behaviours have been referred to as social media "grooming" behaviours or "active social media engagement" (Utz & Beukeboom, 2011). These behaviours require the user to at least briefly

reflect on the content they are viewing. However, social media can also be consumed in a passive manner, such as merely scrolling down a newsfeed, which may be considered similar to passively flipping through pages of a magazine. In today's society, young women are not primarily attracted to conventional forms of media, such as magazines; instead, this demographic is very likely to use social media (Bair, Kelly, Serdar, & Mazzeo, 2012; Perloff, 2014).

One of the suggested psychological consequences of engaging in social communication on social media is excessive concern with thinness (Kim & Chock, 2015). Active social media engagement is associated with drive for thinness — a core feature of eating disorders — in young women (Kim & Chock, 2015; Garner, Olmsted, & Polivy, 1983). However, it has been found that mere exposure to one's Facebook account is unrelated to body image concerns (Kim & Chock, 2015; although see Tiggemann & Slater, 2013 for contrary findings). Appearance comparison appears to influence the relationship between active social media engagement and body image concerns, such as drive for thinness (Kim & Chock, 2015; Fardouly & Vartanian, 2016).

Body dissatisfaction, which is related to drive for thinness, is pervasive in young women and related to disordered eating (Sarwer, Thompson, & Cash, 2005). Social media settings predominantly contain online social worlds of similar others and often emphasise the attractiveness of peers, which may negatively affect an individual's own body image (Perloff, 2014). In a sample of young women, in vivo exposure to an attractive unknown peer fitting the culturally endorsed thin ideal was found to increase body dissatisfaction (Krones, Stice, Batres, & Orjada, 2005). It is possible that exposure to an attractive peer on social media may also increase body dissatisfaction.

At-Risk Women

Importantly, research shows exposure to media is associated with body dissatisfaction in women (Grabe, Ward, & Hyde, 2008). Obviously, not all females who view media will experience body dissatisfaction or develop an eating disorder. Rather, it is likely that the association between exposure to media, whether traditional or social media, and body dissatisfaction is impacted by individual differences, such as trait appearance investment, trait appearance comparison tendencies, or even drive for thinness (Perloff, 2014; Levine & Chapman, 2011). Appearance investment is the extent to which an individual believes their appearance is important in their lives (Cash, Melnyk, & Hrabosky, 2004). Although individual differences play a role, females are more attuned to attending to physical appearance and to conforming to societal physical attractiveness ideals than are males (Perloff, 2014). Higher attunement to physical appearance schemas may explain why females are more likely than males to use Instagram, a heavily image-based social media application, to take and post selfies, crop photos, and use photographic filters (Dhir, Pallesen, Torsheim, & Andreassen, 2016).

Personality traits can function as moderators of various psychological phenomena, strengthening or weakening relationships between variables (Kazdin, 2007). A trait tendency to compare one's appearance to that of others is a pre-existing characteristic that moderates the effects of exposure to traditional media on females' body image concerns. In particular, women who frequently compare their appearance to others are more negatively affected by exposure to traditional media, compared to women who do not engage in as many appearance comparisons (Dittmar & Howard, 2004). It is currently unclear which women are more likely to experience body image disturbances than others as a consequence of typical social media use, although some evidence points to appearance comparison tendencies and investment in one's appearance

as likely moderators of the relationship between social media use and certain body image disturbances.

Social Media and Body Image

Two experimental studies on body image and social media give some indication as to which female social media users may be particularly vulnerable to the effects of active social media engagement on eating disorder risk factors. Recently, it has been shown that a trait appearance comparison tendency moderates a relationship between time spent on social media and body image concerns, such that women high in trait appearance comparison reported more dissatisfaction with various, but not all, components of their own appearance (Fardouly, Diedrichs, Vartanian, & Halliwell, 2015). This is similar to the finding that having a high trait tendency to engage in appearance comparisons influences the relationship between exposure to traditional media and body dissatisfaction in women (Tiggemann & McGill, 2004; Van Den Berg, Thompson, Obremski-Brandon, & Covert, 2002). When asked to browse on their Facebook account for 10 minutes, with no instructions regarding active versus passive engagement, young women with a high trait tendency to compare their appearance to others reported wanting a better face, hair, and skin than their counterparts who viewed an appearance-neutral website (Fardouly et al., 2015). This indicates that appearance comparison tendency moderates the relationship between social media use and certain aspects of body image. Additionally, young women who considered physical appearance important in their lives were more likely than their less appearance-invested counterparts to report being less satisfied with their own physical appearance when exposed to an attractive versus unattractive unknown other on a Facebook newsfeed (Kim & Park, 2016). This is analogous to the finding that appearance

investment influences the relationship between exposure to traditional media and body image (Hargreaves & Tiggemann, 2002; Ip & Jarry, 2008).

Although to our knowledge no studies on social media and body image have yet explored levels of drive for thinness as a moderator of relationships between social media use and various aspects of body image, women with a high drive for thinness have been shown to experience negative affect hours after seeing media containing idealized images of models (Hausenblas, Janelle, Gardner, & Focht, 2004). Others have argued that individuals with a strong drive for thinness may also be more vulnerable to the negative effects on body image of media exposure (Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005). Still others have shown this to be the case: After viewing media images of models, young women with high drive for thinness had lower self-esteem and greater negative body image (Pavelo, 2006; Hausenblas, Janelle, Gardner, & Focht, 2004).

Clearly, there are indications that appearance investment and appearance comparison tendencies may moderate relationships between at least some body image concerns and social media exposure in ways that are analogous to how they moderate relationships between body image variables and traditional media exposure. Therefore, it is reasonable to postulate that perhaps drive for thinness is also a moderator of the relationships between social media use and at least some body image factors.

Body image and social media research is an emerging field of study. There are only approximately 20 journal articles exploring how social networking sites are related to body image and disordered eating outcomes, about half of which are correlational in nature (Holland & Tiggemann, 2016). Five studies are longitudinal, but only four studies included at least one experimental component at the time of Holland and Tiggemann's (2016) systematic review. Kim

and Park's (2016) article is at least one more experimental study that was not yet published at the time of Holland and Tiggemann's (2016) review of research in this area. One of the experimental studies did not involve asking participants to look at any common social media platform, but instead presented fictitious online profiles and "portfolios" of unknown others whose photographs were coded as either attractive or unattractive and taken from the website www.hotornot.com (Haferkamp & Krämer, 2011). Haferkamp and Krämer's (2011) results were similar to Kim and Park's (2016) in that the participants who looked at the attractive unknown others were more dissatisfied with their own physical appearance than those who looked at the unattractive unknown other. One other experimental study indicated that spending time on Facebook is related to the maintenance of weight and shape concerns, while another showed that Koreans but not Americans witnessing an unknown, underweight peer engage in fat talk on a fake Facebook profile experience lower body satisfaction (Lee, Taniguchi, Modica, & Park, 2013; Mabe, Forney, & Keel, 2014).

Fardouly and colleagues' (2015) experimental study was limited in that it did not require participants to partake in active engagement on social media, whereas Kim and Chock's (2015) work indicates active but not passive engagement is associated with body image concerns. Kim and Park's (2016) experimental study had the same limitation and was also limited in that it did not require participants to interact with known others, whereas Facebook users realistically interact with people whom they know personally to some degree (Hew, 2011).

Social media engagement is rapidly increasing. Many young people engage on their own social media accounts for more than two hours per day (Tsitsika et al., 2014). Only two existing experimental studies on social media and body image involved participants using their own social media accounts, and both studies only required participants to browse their newsfeeds

rather than partake in active engagement in their social media accounts (Fardouly et al., 2015; Mabe, Forney, & Keel, 2014). Previous research has indicated there is an association between active social media engagement and body image concerns among women but there appear to be mixed results regarding if mere time spent on social media sites is associated with body image disturbances (Fardouly & Vartanian, 2016; Kim & Chock, 2015). Thus, experimental research is needed to determine if active social media engagement that approximates how users actually use their social media accounts causes harm to young women's body image and which women are most vulnerable.

There are several known risk factors for body image disturbances, such as low self-esteem, depression, perfectionism, internalisation of the thin ideal, and appearance-based self-worth schemas (Perloff, 2014). Trait appearance comparison tendency, trait appearance investment, and drive for thinness may be risk factors that serve as moderators in the relationship between social media use and body image concerns. It may be the case that many young women experience body dissatisfaction as a result of their typical social media use, but this relationship is strongest for women higher in physical appearance comparison tendencies, appearance investment, and/or drive for thinness.

Festinger's social comparison theory (1954) purports that, when objective benchmarks are unavailable for people to evaluate themselves by, they evaluate themselves based on comparisons with similar others. Upward comparisons are those in which people believe they are comparing themselves to someone who is superior to them in a particular domain; downward comparisons are those in which people believe they are comparing themselves to a person who is inferior to them in a certain realm (Festinger, 1954). Upward and downward comparisons can be made in any domain, including physical appearance. Regarding their appearance, young women

report most frequently making upward comparisons to distant peers, defined as people they may know but do not regularly socialize with in person, on Facebook (Fardouly & Vartanian, 2015). Young women report comparing themselves on Facebook to celebrities just as frequently as to friends, but make these upward comparisons less than to distant peers (Fardouly & Vartanian, 2015). Conversely, family members do not appear to be sources of upward appearance comparisons for female Facebook users. In fact, reporting they judge their own appearance as just above the same (i.e., slightly better) than family members on Facebook, these users appear more likely to engage in downward appearance comparisons with family members on social media (Fardouly & Vartanian, 2015). These findings align with adolescent girls' reports of comparing themselves more frequently to peers and fashion models than family members (Schutz, Paxton, & Wertheim, 2002). However, adolescent girls do report comparing themselves more with sisters than their mothers (Schutz et al., 2002). This may provide a clue as to why young women report the least amount of appearance comparison with family members on Facebook. Perhaps in addition to similar-aged family members like sisters and cousins, the family members young women have on Facebook also consist of older women, such as mothers and aunts, who may not be seen as relevant comparison targets (Fardouly & Vartanian, 2015). However, social media users can engage with contacts that vary in relational closeness and potentiality of being a comparison target, such as friends, family, acquaintances, and celebrities. Therefore, it is important to determine whether engagement with likely compared to unlikely comparison targets accounts for the relationship between social media use and women's body image concerns.

As Fardouly and Vartanian (2015) point out, more experimental research that includes measures of women's trait body image concerns (for example, drive for thinness or appearance

investment) and appearance comparison tendencies is needed to determine if such pre-existing traits influence the strength or direction of the effects of social media on women's state body image concerns. The current study aims to answer this call.

Current Study and Hypotheses

The primary aim of the present study was to examine the effects of typical active social media engagement on how young women feel about themselves, and, specifically, risk factors for disordered eating (i.e., low self-esteem and body dissatisfaction). Within a framework of social comparison theory, this study examined whether having a tendency to compare one's appearance to that of other people's appearance, high drive for thinness, and/or high investment in appearance moderates these relationships. Previous research pointed to how social media is used as a factor to consider in the design of this study. For example, mere time spent inactive on social media appears to be unrelated to body image concerns (Kim & Chock, 2015). Active social media engagement behaviours, however, are significantly correlated with drive for thinness (Kim & Chock, 2015).

It is typical for Facebook friends to be similarly aged peers (West, Lewis, Currie, 2009). The primary hypothesis of the current study is that actively engaging with a similarly aged peer whom young women consider to be more attractive than themselves on social media (upward social engagement) will cause increases in body image and self-esteem disturbances as compared to young women engaging with a person with whom they are unlikely to compare their appearance (non-peer relative). Related hypotheses are that trait tendencies to make appearance-based comparisons and having high appearance investment and/or high drive for thinness will moderate the aforementioned relationships. For example, it was hypothesized that participants who have a trait tendency to make upward appearance comparisons will have poorer state body-

and self-esteem as well as higher body dissatisfaction and overall appearance dissatisfaction after engaging on social media than will participants who do not have this trait tendency.

Subsequently, “acquaintance condition” refers to a manipulation condition in which individuals are asked to use social media to actively and socially engage with an acquaintance (i.e., distant peer) whom they consider more attractive than themselves. Likewise, “family member condition” refers to a condition in which individuals are asked to actively, socially engage with a non-peer relative on social media.

Given that young people report using social media to connect with peers more than family members, and given that young women do not report making upward appearance comparisons to family members on social media but users do have family members as social media contacts, it was decided that a family member condition was an appropriate comparison group against which to evaluate the effects of the typical ways young women report using social media (i.e., viewing and comparing themselves to distant peers) on state body image concerns (Fardouly & Vartanian, 2015; Hew, 2011). While a third true control condition, such as asking participants to view an appearance-neutral website, could have also been included, this type of condition may not be similar enough to using one’s social media accounts to warrant a proper comparison. Hence, only two groups, both of which used their own social media accounts for the study, were included in the design of this study.

One exploratory hypothesis was that participants who have a trait tendency to make downward appearance comparisons will have different state body- and self-esteem as well as different body dissatisfaction post-manipulation than participants who do not have this tendency. Correlational research indicates that there is a small positive association between frequency of comparing one’s body to family members on Facebook and body image concerns, but the

associations of frequency of comparisons to distant peers on Facebook and body image concerns are much larger (Fardouly & Vartanian, 2015). However, no known previous research has investigated the moderating role of trait downward appearance comparison on active social media engagement and body image concerns. It is proposed that a tendency to compare one's own appearance to that of less attractive others may result in different levels of body image concerns for young women who engage with a more attractive peer's social media profiles than for young women who do the same with a family member's social media profiles. This hypothesis is two-sided, as this component is exploratory.

It was hypothesized that, overall, as a result of the manipulations, participants in the acquaintance condition would experience lower state body image, body esteem, and self-esteem as compared to participants in the family member condition. It was expected that, as compared to the family member condition manipulation, the acquaintance condition manipulation would cause participants to experience a larger worsening of state body dissatisfaction and overall appearance dissatisfaction, as measured pre- and post-manipulation through visual analog scales.

Method

Participants

Participants were female York University undergraduate students recruited through the Undergraduate Research Participant Pool (URPP) for a study on "social media and relationships." Characteristics required for the online study eligibility were that participants were female, 18-29 years old, users of both Facebook and Instagram, and willing to complete both parts of the study (online and in-person). Many studies on body dissatisfaction have used young women aged 18-25 (Tiggemann & Lynch, 2001). However, the age group was chosen based on statistical reports of social media use considering 18-29-year-olds "young adults" and the fact

that this age group uses social media intensively (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015; Duggan et al., 2016). Note, however, that only one 26-year-old, one 27-year-old participant, and no older participants completed the study. Only female students were included due to well-known gender differences on body image (Hui & Brown, 2013). Two 17-year-olds completed the online study and were included in the analyses since they were close to turning 18 years old. Nine participants were excluded from all analyses due to experimenter error in the URPP and the resulting inability to track their data, but these cases occurred at random. Of the 251 participants who did the online portion of the study, 113 individuals continued on to complete the in-person lab portion of the study. The rest of them either failed to sign up for the second part of the study or cancelled their appointments and declined to reschedule. For ethical reasons, those participants who completed only the online portion of the study could not be compelled to complete the entire study and received partial study credit. Three additional participants signed up for the online portion of the study and did not complete it yet received credit for it, but did go on to complete the in-person lab portion of the study. That is, a total of 116 participants completed the in-person lab portion of the study.

Exclusions. Body mass index (BMI) was calculated from objective height and weight (kg/m^2). There were no class III obese (i.e., $\text{BMI} \geq 40$) participants. The decision was made to exclude participants in the BMI categories of underweight (i.e., $\text{BMI} < 18.5$) and class II obese (i.e., $\text{BMI} \geq 35.00$; World Health Organization, n.d.). This decision was based on the fact that our research questions were targeted toward individuals in the more typical weight ranges, participants in the underweight category represented only 4.3% of the sample, participants in the class II obese category represented only 6.9% of the sample, and because, at the extreme ends of the weight distribution, objective BMI may affect the validity of body image measures used in

the study. However, overweight (i.e., BMI \geq 25) and class I obese (i.e., BMI \geq 30) participants were included to ensure adequate power and to maximize generalizability. Five underweight and eight class II obese participants were excluded. Additionally, one participant was excluded because, contrary to instruction, she chose a celebrity on social media instead of an acquaintance. One participant was excluded because of response bias: all of her questionnaire responses were the most extreme high answers possible, suggesting that she was either engaging in extremely high positive impression management or not paying attention. Eleven more participants were excluded for not following the age requirement of the social media contact. After these exclusions, a total of 90 participants were included in analyses. Note that this final sample included the three participants who signed up for the online portion of the study, did not complete it, but did go on to complete the in-person lab portion of the study. The mean BMI of the final sample was 23.76 ($SD = 3.66$, range = 18.60 – 33.70).

Demographics. The participants ranged in age from 17 to 27 ($M = 19.28$, $SD = 1.93$). The self-reported ethnicity of the sample was: 23.3% South Asian; 15.8% Middle Eastern; 14.4% European; 10% Caribbean; 5.6% African; 6.7% Latin, Central, and South American; 7.8% Pacific Islanders; 4.4% East Asian; 2.2% African-American; 1.1% Indigenous; and 5.6% other. Only 3.3% of the sample did not report their ethnicity.

Procedure

This study was approved by the York University Human Participants Review Committee. The author and two volunteers conducted the experimental sessions; these experimenters were all female with BMIs in the “healthy” range and between 21 and 31 years old. In the URPP pre-screen, occurring at the start of the academic term, and again in the online portion of the study individuals were asked if they use both Facebook and Instagram. Only those who indicated they

had both types of social media accounts were eligible to sign up for the study.

In the online portion of the study, individuals first gave their consent (see Appendix A) and then answered questions about how often they use their social media accounts, how often they comment on and “like/react to” posts on Facebook and Instagram (see Appendix B). Participants also completed trait measures of tendency toward both upward and downward social comparison and a trait measure of personal appearance investment so that these responses were not contaminated by the experimental manipulation in the in-person portion of the study (see Appendices C through E). Demographics were also collected in the online session (see Appendix F). The last page of the online survey served as a reminder to participants to sign up for part two (i.e., the experimental lab session; see Appendix G).

There was an average of just over 6.5 weeks between completion of the online portion and in-person portion of the study. The amount of time between the online and in-person portions of the study was assumed to vary at random and was due to scheduling constraints. Participants completed their in-person experimental sessions individually. In addition to consenting prior to the online study, all part two participants again provided informed written consent prior to beginning the experiment (that is, part two; see Appendix H). They were told that the study was looking at “different ways people use social media in various relationships” but were not told the true, complete purpose or hypotheses of the study. After signing this informed consent form, each participant was randomly assigned to one of two conditions. Every participant was seated alone in a private room to complete the experiment; the experimenter only entered the room to explain the consent form and to explain instructions for the experimental tasks.

After completing baseline visual analogue scale (VAS) measures of state body dissatisfaction (BD) and overall appearance dissatisfaction (OAD; see Appendix I), participants

in the “acquaintance condition” were asked to write down the initials of a female non-family, non-close-friend acquaintance who (a) they considered *more* attractive than themselves, (b) who had both Facebook and Instagram accounts, and (c) who was within five years younger or older than them (see Appendix J). They were also asked to briefly describe their relationship with this acquaintance (for example, “classmate”). In the acquaintance condition, the reason for asking participants to identify individuals within their own age range was to ensure the individual was considered a peer.

After completing baseline VAS measures of state body and overall appearance dissatisfaction, participants in the “family member condition” were asked to write down the initials of a female family member who (a) they *did not* consider more attractive than themselves, (b) who had both Facebook and Instagram accounts, and (c) who was at least five years younger or older than them. They were also asked to briefly describe their relationship with this family member (for example, “aunt”; see Appendix K). In the family member condition, the reason for asking participants to identify individuals much older or younger than them was to ensure the individual was not considered a peer.

After identifying either an acquaintance or family member, all participants were then asked to actively socially engage with that contact’s Facebook and Instagram pages for exactly 10 minutes (see below manipulation sections for specific instructions). To clarify, active social engagement on social media are behaviours such as looking at contacts’ (often referred to as “friends” in the social media realm) social-media profiles, “liking” friends’ posts and photos, and commenting on friends’ posts and photos (Kim & Chock, 2015; Utz & Beukeboom, 2011). The thought was to have participants engage in the social media activity for a sufficient amount of time to reflect on and engage in the task but not be required to be on just one social media

platform so long that they got bored with or distracted from the task and could be tempted to go to other websites while the experimenter was not in the private room with them. While it could be argued that having participants do the task on both Facebook and Instagram may muddy results, the intention was to have the experiment approximate ecologically valid active social media engagement. Individuals with smartphones may have multiple social media applications, easily switching frequently between applications such as Facebook and Instagram. Very little experimental research on body image and Instagram, an appearance-focused social media application, has been done, and the comparison groups were only exposed to travel images, not images featuring people (Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015). Therefore, another reason for using both Facebook and Instagram in this experiment was to add to this emerging field of study.

Following the experimental manipulation, participants were then asked to complete a social media interaction questionnaire about what they just did, the dependent measures of interest, and a suspicion probe before being weighed and having their height measured. Participants were then given verbal and written feedback outlining the true, complete objectives of the study.

Attractive acquaintance active social media engagement manipulation. Participants in the acquaintance condition looked at and commented on their acquaintance's social media posts for five minutes per social media platform (i.e., Facebook and Instagram). Participants started their Facebook and Instagram sessions by going directly to the peer's respective home profile pages. After identifying their acquaintance, they were given written instructions to look at only the identified peer's social media pages (i.e., not the participant's own homepage or newsfeed, etc.), try to find at least one full-length photo of the peer on Facebook, and leave an online

comment on this photo. They were instructed that if they could not find a full-length photo of their peer, they could substitute different photos of the peer to comment on, but they must comment on at least one photo featuring the peer. Participants were instructed that they could view any other webpages that were a part of the peer's Facebook profile during the first five-minute active social media engagement session and engage with the peer's profile in any other way they liked, aside from messaging the acquaintance directly (see Appendix L). To minimize demand characteristics, no particular comparison instructions were given (Mills, Polivy, Herman, & Tiggemann, 2002). After giving participants enough time to read the written instructions, the experimenter entered the room and verbally reiterated the social media instructions, turned on the computer screen, and loaded the www.facebook.com sign-in webpage. The experimenter then told the participant that the experimenter would leave the room, set the timer for five minutes, and come back when the time was up, knocking on the door first to ensure the participant could log out of her Facebook account if she did not want the experimenter to see her social media account. When the experimenter came back after exactly five minutes, she gave the participant written instructions similar to the Facebook instructions, but instead of doing the social media activity on Facebook, the participant was asked to do the same thing on Instagram (Appendix M). After closing the www.facebook.com webpage, the experimenter loaded the www.instagram.com sign-in webpage. Once the second five minutes were up, the experimenter came back into the room, gave a brief age of contact check, social media interaction questionnaire, and the dependent variables. Finally, an additional potential moderator not included in the online portion of the study – drive for thinness – was included at the end of the questionnaire package.

Family member active social media engagement manipulation. The instructions in this

condition were identical to the acquaintance condition except that participants in the family member condition looked at and comment on their family member's, not an acquaintance's, social media posts for five minutes per social media platform (i.e., Facebook and Instagram). For the family member condition social media engagement manipulation instructions, see Appendix N and Appendix O. Participants in this condition were given the same post-manipulation questionnaires as participants in the acquaintance condition. See Appendix P and Appendix Q for the age of contact check and social media interaction questionnaire, respectively.

Measures

Trait appearance comparison. The 10-item Upward Physical Appearance Comparison Scale (UPACS; O'Brien et al., 2009) measured participants' trait tendency toward making comparisons with individuals considered more attractive than themselves. Participants rated the extent to which they agreed with statements about tendencies to make personal upward physical appearance comparisons with others (O'Brien et al., 2009). Responses are typically made on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), but an error in the creation of the online part of this study produced a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). High scores represent a strong tendency to compare their own physical appearance to that of more physically attractive others in various situations (Festinger, 1954; O'Brien et al., 2009). Cronbach's α for this sample was .96. O'Brien et al. (2009) reported an internal consistency of .94 on the original sample used for developing this scale.

The eight-item Downward Physical Appearance Comparison Scale (DPACS; O'Brien et al., 2009) was used to measure participants' trait tendency to engage in comparisons with individuals considered less attractive than themselves. Participants rated the extent to which they agreed with statements about tendencies to make personal downward physical appearance

comparisons with others (O'Brien et al., 2009). Responses are made on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), but a technical error in the creation of the online part of this study produced a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). High scores represent a strong inclination to compare one's physical appearance with others who are less physically attractive than one's self (Festinger, 1954; O'Brien et al., 2009). Cronbach's α for this sample was .96. O'Brien et al. (2009) reported an internal consistency of .92 on the sample used for developing this scale.

Personal Appearance Investment. The Appearance Schemas Inventory – Revised (ASI-R; Cash, Melnyk, & Hrabosky, 2003) was used to measure participants' pre-existing assumptions and beliefs about the meaning, influence, and importance of their own appearance. This scale consists of 20 items. Participants rated the extent to which they agreed with each statement. Responses are made on a 5-point scale ranging from one (*strongly disagree*) to five (*strongly agree*). High scores represent attributing high meaning, importance, and influence of personal appearance. Cronbach's α for this sample was .83. Cash et al. (2003) reported an alpha of .88 for women in the original sample used for developing this 20-item scale. In addition to the composite ASI-R scale, this scale also contains two subscales: a 12-item self-evaluative salience subscale and an eight-item motivational salience subscale. The self-evaluative subscale (ASI-R-SES) is a measure of degree of belief about how one's looks influence their sense of self and personal or social worth. Cash et al. (2003) reported an alpha of .82 for women for this subscale in the original sample. Cronbach's α for this sample was .75. The motivational salience subscale (ASI-R-MS) is a measure of the motivational importance of being attractive and managing one's appearance. Cash et al. (2003) reported an internal consistency of .90 for women for this subscale in the original sample. Cronbach's α for this study's sample was .78.

Demographics. Participants completed demographic questions in which they stated their age, gender, and ethnic origin.

Pre/post body and overall appearance dissatisfaction. The VAS-body dissatisfaction (VAS-BD) and VAS-overall appearance dissatisfaction (VAS-OAD) scales were used to measure state body dissatisfaction and state overall appearance dissatisfaction (Heinberg & Thompson, 1995). The post-manipulation VASs were identical to the pre-manipulation VASs (although, see Appendix R for slight variation of presentation of post-manipulation VASs from pre-manipulation VASs). Heinberg and Thompson (1995) reported constructing a VAS-BD and a VAS-OAD measure, along with three mood VAS measures. Both body image VASs constructed by Heinberg and Thompson (1995) correlate with the Eating Disorders Inventory – Body Dissatisfaction Subscale, demonstrating convergent validity (Garner et al., 1983). However, they later reported amalgamating a “VAS-weight dissatisfaction” and the VAS-OAD into one measure of body dissatisfaction with no explanation as to when or how they constructed the VAS-weight dissatisfaction. Therefore, in the current study, the VAS-BD and VAS-OAD were not combined but were analyzed as separate body image measures. Participants rated how much dissatisfaction they felt about each dimension by placing a short vertical line on a 9.8-cm horizontal line; responses were scored to the nearest millimeter, which produced a 98-point scale. The range of responses was labelled “*none*” to “*very much*,” with higher scores indicating greater state body or overall appearance dissatisfaction. The intention was for the horizontal line to be 10-cms long; however, a printing error produced a 9.8-cm line (Heinberg & Thompson, 1995). Consequently, 0.2 cm were added to every response before being multiplied by 100 to produce a 100-point scale. Reliability coefficients of VAS measures cannot be calculated given

the nature of the measures; participants do not give summative ratings of their body or overall appearance dissatisfaction levels (Heinberg & Thompson, 1995; Jung & Lennon, 2003).

Both pre-manipulation and post-manipulation VAS body dissatisfaction and VAS overall appearance measures were taken and, as is customary, change scores were calculated. Higher scores indicate higher state body and overall appearance dissatisfaction. Visual analog scales are advantageous in that they are quick, can dependably measure fluctuations, and, when given before and after a manipulation, unless the mark they made on the pre-test measure was at the extreme end of the line, participants cannot remember exactly where their previous mark was made (Tiggemann, Slater, Bury, Hawkins, & Firth, 2013).

Social media questionnaire. Participants filled out a questionnaire asking to confirm whether or not they found full-length photos of their acquaintance (or family member), for a description of the photos they commented on, what comments they left and why, what else they looked at, and if they “liked” or engaged with the peer’s (or family member’s) profile in any other way and why, and what this engagement entailed. They were also asked how representative was the study active social media engagement session of how they normally use Facebook and Instagram. This questionnaire served as a manipulation check.

State body image. The six-item Body Image States Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002) was used to measure state body dissatisfaction (see Appendix S). The BISS measures one’s current experience of one’s body in six realms: (1) how satisfied one is with one’s overall physical appearance, (2) body size and shape satisfaction, (3) weight satisfaction, (4) feelings of physical attractiveness, (5) present feelings about how one looks relative to how one usually feels, and (6) an evaluation of one’s own appearance relative to the average person’s appearance (Cash et al., 2002). Responses are made on a nine-point Likert-

type scale. Cash et al. (2002) reported a Cronbach's alpha of .77 for women in a neutral context and a Cronbach's alpha of .88 and .90 for women respectively for two negative contexts in the original sample used for developing the BISS. The Cronbach alpha for the present sample was .68, which was deemed adequate for our purposes in combination with other measures of body image. However, the possibility of questionable internal consistency was acknowledged and the ensuing results were interpreted with caution.

State self-esteem. The 20-item state self-esteem scale (SSES; Heatherton & Polivy, 1991) was used to measure participants' state self-esteem (see Appendix T). Each item loads onto one of three correlated factors of self-esteem: (1) performance self-esteem, (2) social self-esteem, and (3) appearance self-esteem (Heatherton & Polivy, 1991). Responses are made on a five-point scale ranging from one (*not at all*) to five (*extremely*). High scores represent high total state self-esteem, performance self-esteem, social self-esteem, or appearance self-esteem respectively for the composite scale and three subscales. Heatherton and Polivy (1991) reported a coefficient alpha of .92 for the whole scale on the original sample. Cronbach's α for this sample was .90 for the composite scale, .83 for the performance self-esteem subscale, .79 for the social self-esteem subscale, and .83 for the appearance self-esteem subscale.

State body esteem. To measure body esteem, the 35-item body esteem scale (BES) was used (Franzoi & Shields, 1984; see Appendix U). Research indicates that body esteem is a multidimensional, not unidimensional, construct (Franzoi, personal communication, April 30, 2017). Therefore, each of the three subscales of the BES relevant to females was analyzed separately. For females, body-esteem consists of sexual attractiveness, weight concern, and physical condition (Franzoi & Shields, 1984). The appearance of body parts that load on the sexual attractiveness factor cannot be changed through exercise, only through cosmetics; there

are high loadings of items that deal with sexuality on the body esteem scale – sexual attractiveness subscale (BES-SA; Franzoi & Shields, 1984). The body esteem scale - weight concern subscale (BES-WC) includes feelings about physical appearance that includes body parts that can be physically altered through exercise or control of food intake (Franzoi & Shields, 1984). The body esteem scale - physical condition subscale (BES-PC) includes items dealing with stamina, strength, and agility — characteristics that are not usually under public scrutiny, except during athletic competitions (Franzoi & Shields, 1984). Franzoi and Shields (1984) reported a coefficient alpha of .78 for the BES-SA, .87 for the BES-WC, and .82 for the BES-PC for females. In the present sample, the coefficient alpha for the BES-SA was .78, the coefficient alpha for the BES-WC was .87, and the coefficient alpha for the BES-PC was .86.

Drive for thinness. The seven-item drive for thinness subscale of the 64-item eating disorder inventory (EDI-DFT; Garner et al., 1983) was used to measure excessive concern with dieting, weight, and pursuit of thinness (see Appendix V). Responses are supposed to be made on a six-point scale ranging from one (*always*) to six (*never*). However, due to a printing error, responses were made on a five-point scale ranging from one (*always*) to five (*rarely*) in this study. Garner et al. (1983) reported a Cronbach’s alpha of .85 for the drive for thinness (DFT) subscale on the original anorexic and bulimic sample used for developing the eating disorder inventory (EDI). Despite the printing error, internal consistency in this study was high and comparable to the original sample. Cronbach’s alpha for EDI-DFT in this study was .87. Seeing as the response “one” corresponds to “always,” higher scores actually indicate *lower* drive for thinness.

Height and weight. After completing the dependent measures and DFT, in private, participants were weighed and measured on a balance beam scale by the experimenter in order to calculate objective BMI.

Suspicion probe. To probe for suspicion, most participants were told verbally that people sometimes develop ideas about what is being studied and it is important for researchers to know whether people do this. The participants were asked if they had guesses about what was being studied, when these thoughts occurred to them, and if they thought their guesses affected their answers. Occasionally, participants in side-by-side non-soundproof private rooms would complete the dependent measures at almost the same time. On these occasions, the participant who was finished the dependent measures first would receive a written suspicion probe prompt so that the other participant's dependent measures responses would not be influenced by hearing the experimenter ask the suspicion probe or by hearing a participant's answers to this prompt (see Appendix W). Note that although this prompt appeared on the same page as the record of height and weight, neither height nor weight was recorded on this page prior to the participant providing a written response to the suspicion prompt on the occasions in which participants gave written answers to the suspicion prompt. Participants were asked to state their own thoughts about what was being studied and state at what point each thought occurred to them during a verbal debriefing session at the end of the experiment. No participants correctly guessed the hypotheses of the study.

Debriefing. At the end of the experimental session, the experimenter thanked participants and debriefed them orally. The need for incomplete disclosure was explained, as was the request to not talk about the experiment outside of the sessions. Following the oral debriefing, participants were given a feedback sheet that they could keep (Appendix X). This information

sheet outlined the true, complete objectives of the study. This sheet also contained the researchers' contact information and body image resources. Participants were told that they could contact the researchers if they would like to find out the results or had any questions.

Data Analysis

Three separate one-way between-groups multivariate analyses of variance (MANOVAs) and one one-way between-groups univariate analysis of variance (ANOVA) were performed to investigate differences between the experimental conditions in terms of the dependent variables of interest. The independent variable in all of these analyses was membership in condition (active social media engagement with an acquaintance versus a family member).

In one MANOVA, both of the VASs were entered as the dependent measures, as, given that both entail feelings about the look of one's entire physique, theoretically, body dissatisfaction and overall appearance dissatisfaction are conceptually related, and because these measures appeared on the same questionnaire. Instead of a MANOVA on change scores, an analysis of covariance (ANCOVA) could have been performed to assess post-manipulation body dissatisfaction and overall appearance dissatisfaction, controlling for pre-manipulation levels. However, body image typically fluctuates widely between individuals. As it is reasonable to assume that participants actually felt different about their bodies at baseline, it was decided that these differences should not be adjusted for or obscured, and analyzing with ANCOVA was decided against.

As the pre-post VAS change scores for body dissatisfaction's distribution was positively skewed, a transformation whereby 201 was added to each score before the square root was taken of each score was performed in order to produce a more normal distribution. The reason for adding 201 was that the lowest VAS body dissatisfaction change score was -200 (already

multiplied by 100), and in order for a square root transformation to be applied, each score needed to be a positive value. As the distribution of the VAS overall appearance dissatisfaction change scores was slightly positively skewed, a transformation whereby 161 was added to each score before the square root was taken of each score was performed in order to produce a more normal distribution. The reason for adding 161 was that the lowest untransformed VAS body dissatisfaction score was -160 (already multiplied by 100), and in order for a square root transformation to be applied, each score needed to be a positive value. Further preliminary assumption testing was then conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity. A serious violation of multivariate normality was noted, suggesting the presence of multivariate outliers. As two cases exceeded the critical value for evaluating Mahalanobis distance (that is, 13.82 for two dependent variables), these two cases were excluded from this MANOVA. After the removal of these cases, there was no longer a violation of multivariate normality. No other assumptions were violated.

Given their position of all being measures of state self-esteem and given that the authors of the SSES note their significant correlation with one another, in a MANOVA, the three separate subscales of the SSES were entered as the dependent measures (Heatherton & Polivy, 1991). Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted.

All three BES subscales were entered as the dependent measures in a MANOVA, as, although body esteem is a multidimensional construct, these subscales are all measures of body esteem and therefore theoretically similar to one another. Preliminary assumption testing was

conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted.

Only when MANOVAs were significant were they followed up with univariate analyses. The area of body image and social media research is an emerging line of inquiry. Therefore, in order to inform future studies rather than not disseminate results that may converge with the existing literature, no conservatively adjusted alpha level was employed for the follow-up univariate analyses. That is, the alpha level remained at 0.05.

A one-way between-groups ANOVA was conducted to explore the impact of condition on state body image, as measured by the BISS. Preliminary assumption testing was conducted to check for normality and homogeneity of variance with no violations noted.

Several simple moderation analyses using the PROCESS macro for SPSS (Hayes, 2013) were performed to assess the hypotheses regarding the potential moderators, trait tendencies to compare physical appearance and appearance investment. For example, a simple moderation analysis using the PROCESS macro was performed to test the hypothesis that the relationship between condition and state appearance self-esteem would be moderated by trait upward physical appearance comparison tendencies. Although the PROCESS tool produces the same output as the normal regression tools in SPSS, using the PROCESS tool is advantageous because it does simple slopes analysis as well (Field, 2013). This means that the nature of significant interactions can be followed up on. Using the PROCESS macro, results include simple slopes analyses that compute the regression for condition and the outcome variables at low, average, and high levels of the moderators. The sample mean is average while plus one standard deviation above the mean is considered “high” and minus one standard deviation below the mean is considered “low.” This analysis gives insight as to what levels of the moderator the interaction is

actually significant, rather than assume the interaction is significant at all levels of the moderator (Field, 2013). Therefore, the PROCESS tool allows for a more detailed account of what type of individual is likely to be affected by social media use.

Centring or standardizing independent variables is not required to test moderation hypotheses (Hayes & Rockwood, 2016). Furthermore, seeing as mean-centring the dummy-coded conditions would not make conceptual sense, neither the independent variable (i.e., condition) or any of the potential moderators (e.g., UPACS, DPACS, ASI-R) were mean-centred in any of the simple moderation analyses. As they did not complete the part one (i.e., the online survey) measures, the three participants who signed up but failed to complete part one had their data treated as missing in the moderation analyses. Only the cases that did not violate the assumption of multivariate normality were entered in the moderation analyses involving body dissatisfaction and overall appearance dissatisfaction.

For all analyses, results were considered significant at the $\alpha = .05$ level. Statistical analyses were performed using SPSS version 21 and 24. Degrees of freedom vary in some analyses due to missing data.

Results

Preliminary Analyses

As BMI is known to influence body image, a one-way univariate ANOVA was run with BMI as the dependent measure and condition as the independent measure. Results indicated that randomization did result in equivalent groups between conditions in terms of BMI, $F(1, 88) = .10, p = .75$. Therefore, BMI was not considered as a covariate in subsequent analyses. Note that, even when all 116 participants (i.e., including underweight and class II obese participants) were

included in a one-way univariate ANOVA with BMI as the dependent measure and condition as the independent measure, the groups were equivalent in terms of BMI, $F(1, 114) = .01, p = .90$.

Descriptive Analysis of Typical Social Media Use

To assess if asking participants to find, view, and comment on social media pictures as was the case in part two of the current study is related to the commonly reported uses of social media, questions about typical uses of social media were included in part one. The results of the online study (i.e., part one) revealed that the activities the participants completed in the experiment align with common uses of social media. Of the participants who completed both parts one and two (also called “completers”), 77% reported “liking/reacting to” Facebook posts from several times per day to at least one to two times per week. Of these same participants, 31% comment on Facebook posts from several times per day to at least one or two times a week. When asked how often they “like” Instagram posts, 75.6% of completers reported doing so several times a day; only 4.4% reported doing so less often than every few weeks. About 67% of respondents reported commenting on others’ Instagram posts several times a day to at least once to twice a week.

When asked to check “all that apply” in terms of when using Facebook what they do on a regular basis, 85.6% of participants checked “look at photos,” 73.3% checked “use chat or send messages,” and 52.2% checked “comment on or “like/react” to friends’ photos.” The aforementioned Facebook uses were the top three Facebook activities reported of 14 choices. When asked to check “all that apply” in terms of when using Instagram what they do on a regular basis, 93.3% checked “look at photos,” 88.9% checked “comment on or like/react to photos/videos,” and 63.3% checked “tag friends.” The aforementioned Instagram uses were the top three Instagram activities reported of 14 choices.

In response to how representative the experimental lab session was of how they typically use Facebook, the average response fell between “somewhat” and “moderately” ($M = 2.62$). In response to how representative the experimental lab session was of how they typically use Instagram, the average response was close to “very” ($M = 3.36$). One can speculate about why the representativeness of the lab session in terms of typical use varied between platforms. Facebook’s mission is to “give people the power to build community and bring the world closer together” (Facebook, n.d.). Facebook is more diverse in how it can be used than Instagram, which uses visual storytelling to “capture and share the world's moments” (Instagram, n.d.). Participants might generally use Facebook to connect with friends (e.g., through messaging, inviting contacts to events, etc.), whereas Instagram might be used primarily to post and view photos. The manipulation used herein was image-focused, and Instagram is clearly a more image-focused social media application than Facebook. Nevertheless, these results, taken together with the rest of the descriptive analysis of typical social media use, indicate that the experimental active social media engagement tasks did approximate how participants actually use these social media platforms in their daily lives.

Manipulation Check

In part two, the participants were left alone in a private room with a computer station while actively engaging on social media profiles. Accordingly, the web browser history was checked after each participant completed the experiment to determine if participants only viewed their peers’ or family members’ social media profiles and not any other websites. If a participant had viewed a Facebook or Instagram contact’s profile page, the history tab showed an address that includes the contact’s username. Based on the initials the participants wrote down to identify their social media contact, the experimenter determined if the username matched the initials.

However, this was not a foolproof method of checking if the induction took place, as people can choose to create social media accounts with usernames not based on their actual names. If the history tab indicated that the participant went to different webpages during the active social media engagement sessions, the websites were noted. The social media interaction questionnaire also served as a manipulation check. All participants wrote down the comments they left, indicating that they did engage in and reflect on their active social media engagement.

Relationship Between Type of Social Media Use and Body Image

There was no significant difference between family member and acquaintance conditions on the combined body dissatisfaction and overall appearance dissatisfaction dependent variables, although there was a trend toward significance, $F(2, 83) = 2.30, p = .11$, partial $\eta^2 = .05$ (see Table 1 for descriptives and effect sizes).

Table 1. Descriptive Statistics and Effect Sizes for Body and Overall Appearance Dissatisfaction for Appearance-Based Family Member and Acquaintance Social-Media Engagement Conditions

Variable	Family Member (40)		Acquaintance (47)		$F(1, 84)$	Partial η^2
	M	SD	M	SD		
Changed Body Dissatisfaction (transformed)	14.13	3.05	15.35	2.59	4.04	.048
Changed Overall Appearance Dissatisfaction (transformed)	13.20	2.46	13.70	3.11	2.28	.134

* $p < 0.05$.

There was a statistically significant difference between family member and acquaintance conditions on the combined subscales of the SSES, $F(3, 83) = 10.11, p = 0.0001$, partial $\eta^2 = .27$. When results for the dependent variables were considered separately, the differences between conditions on every SSES subscale reached statistical significance: appearance self-esteem, $F(1, 85) = 27.62, p = .000001, \eta_p^2 = .25$, performance self-esteem, $F(1, 85) = 10.86, p = 0.001$, partial $\eta^2 = .11$, and social self-esteem, $F(1, 85) = 6.1, p = 0.02$, partial $\eta^2 = .07$. An inspection of the mean scores indicated that participants in the acquaintance condition reported lower levels of state appearance self-esteem ($M = 17.30, SD = 4.16$) than participants in the family member condition ($M = 22.10, SD = 4.34$). Participants in the acquaintance condition reported lower levels of state performance self-esteem ($M = 22.67, SD = 5.21$) than participants in the family member condition ($M = 26.1, SD = 5.02$). Participants in the acquaintance condition reported lower levels of state social self-esteem ($M = 20.38, SD = 5.18$) than participants in the family member condition ($M = 23.25, SD = 5.64$). See Table 2 for descriptive statistics and effect sizes.

Table 2. Descriptive Statistics and Effect Sizes for State Self-Esteem for Appearance-Based Family Member and Acquaintance Social-Media Engagement Conditions

Variable	Family Member (40)		Acquaintance (49)		<i>F</i> (1, 85)	<i>Partial</i> η^2
	M	SD	M	SD		
State Performance Self Esteem	26.10	5.02	22.47	5.21	10.86*	.11
State Social Self Esteem	23.25	5.64	20.38	5.18	6.10*	.07
State Appearance Self Esteem	22.10	4.34	17.29	4.16	27.62*	.25

* $p < 0.05$.

The difference between family member and acquaintance conditions on the combined subscales of the BES approached significance, $F(3, 86) = 2.34$, $p = 0.08$; partial $\eta^2 = .08$ (see Table 3).

Table 3. Descriptive Statistics and Effect Sizes for State Body Image for Appearance-Based Family Member and Acquaintance Social-Media Engagement Conditions

Variable	Family Member (40)		Acquaintance (50)		$F(1, 88)$	Partial η^2
	M	SD	M	SD		
Sexual Attractiveness Body Esteem	45.13	7.48	41.90	7.73	3.98	.04
Weight Concern Body Esteem	32.80	7.48	41.90	8.79	6.07	.07
Physical Condition Body Esteem	29.70	6.01	26.60	7.27	4.70	.05

* $p < 0.05$.

There was a statistically significant difference in BISS scores, $F(1, 88) = 9.24, p = 0.003, \eta^2 = 0.10$. An inspection of the BISS mean scores indicated that participants in the acquaintance condition reported lower levels of state body image ($M = 4.81, SD = 1.09$) post-manipulation than participants in the family member condition ($M = 5.51, SD = 1.09$). See Table 4 for descriptive statistics and effect sizes.

Table 4. Descriptive Statistics and Effect Sizes for Body Esteem for Appearance-Based Family Member and Acquaintance Social-Media Engagement Conditions

Variable	Family Member (40)		Acquaintance (50)		<i>F</i> (1, 88)	η^2
	M	SD	M	SD		
State Body Image	5.51	1.09	4.81	1.09	9.24*	.10

* $p < 0.05$.

Downward Physical Appearance Comparison Moderation

Results of a simple moderation analysis revealed that the interaction between condition and downward physical appearance comparison tendencies accounted for a significant proportion of the variance on state appearance self-esteem, $\Delta R^2 = .06$, $b = .21$, $t(82) = 2.71$, $p = 0.01$ (see Table 5).

Table 5. State Appearance Self-Esteem Predicted from Downward Physical Appearance Comparison and Condition

Predictor	B	<i>P</i>	95% CI
Downward Physical Appearance Comparison	-.11	.05	-.22, .001
Condition	-10.03	.00001	-14.10, -5.97
Condition x Downward Physical Appearance Comparison	.21	.01	.06, .37

Note. $\Delta R^2 = .06$.

Therefore, support for a moderation effect was found. Figure 1 shows the simple moderation model tested. Examination of the conditional effect values showed an effect wherein lower downward physical appearance comparison tendencies together with membership in the family member condition enhanced state appearance self-esteem. Therefore, conversely, lower DPACS together with membership in the acquaintance condition worsened state appearance self-esteem. When DPACS was low, there was a significant negative relationship between condition and state appearance self-esteem, $b = -7.42$, 95% CI [-9.89, -4.94], $t = -5.97$, $p = .00001$. At the mean value of DPACS, there was a significant negative relationship between condition and state appearance self-esteem, $b = -5.02$, 95% CI [-6.78, -3.27], $t = -5.70$, $p = .00001$. When DPACS was high, there was a non-significant negative relationship between condition and state appearance self-esteem, $b = -2.63$, 95% CI [-5.12, -0.14], $t = -1.19$, $p = .24$. These results tell us that the relationship between active social media engagement condition and state appearance self-esteem emerges for people who have low or average levels of downward physical appearance tendencies.

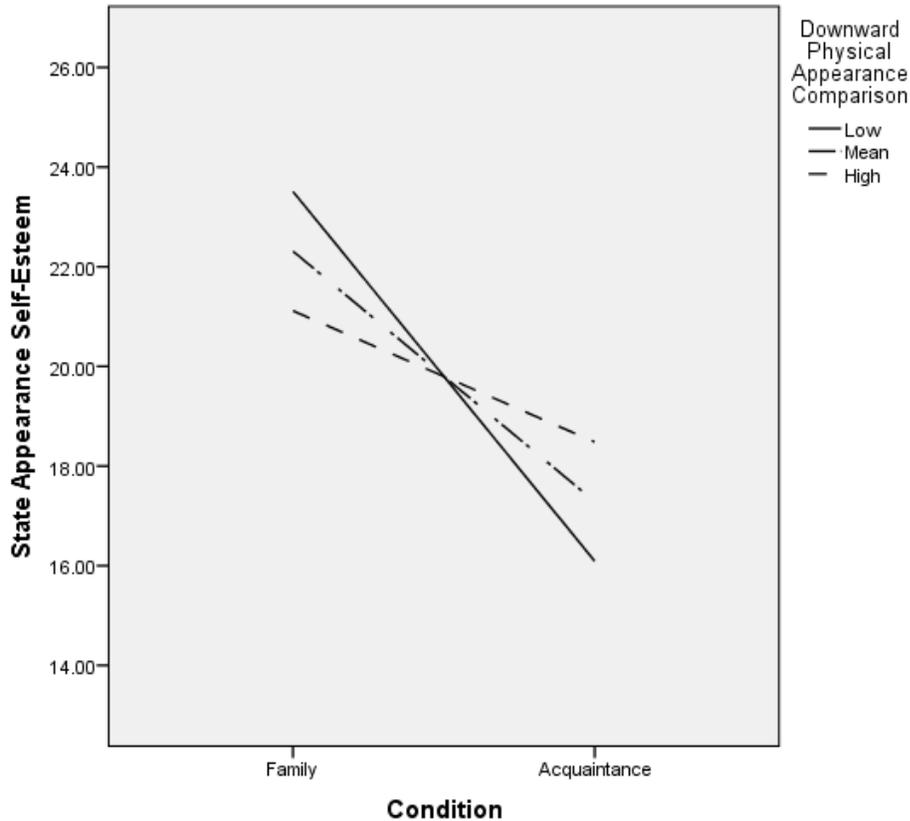


Figure 1. Simple slopes of the regression of state appearance self-esteem on condition at three levels of downward physical appearance comparison tendencies.

The interaction between condition and downward physical appearance comparison tendencies accounted for a significant proportion of the variance on body esteem for physical condition, $\Delta R^2 = .11$, $b = .40$, $t(83) = 3.27$, $p = 0.002$. Therefore, support for a moderation effect was found. Figure 2 shows the simple moderation model tested. When DPACS was low and participants were in the family member condition, participants' body esteem regarding their physical condition was positively enhanced. Conversely, when participants were in the acquaintance condition and DPACS was low, their body esteem for their physical condition was worsened. When DPACS was low, there was a significant negative relationship between

condition and physical condition body esteem, $b = -8.04$, 95% CI [-11.84, -4.23], $t = -4.20$, $p < .01$. At the mean value of DPACS, there was a significant negative relationship between condition and physical condition body esteem, $b = -3.59$, 95% CI [-6.30, -0.89], $t = -2.64$, $p < .01$. When DPACS was high, there was a non-significant positive relationship between condition and physical condition body esteem, $b = .85$, 95% CI [-2.99, 4.68], $t(83) = 0.44$, $p = .66$. Therefore, the relationship between active social media engagement condition and physical condition body esteem really only emerges for people who have low-to-mid levels of downward physical appearance tendencies.

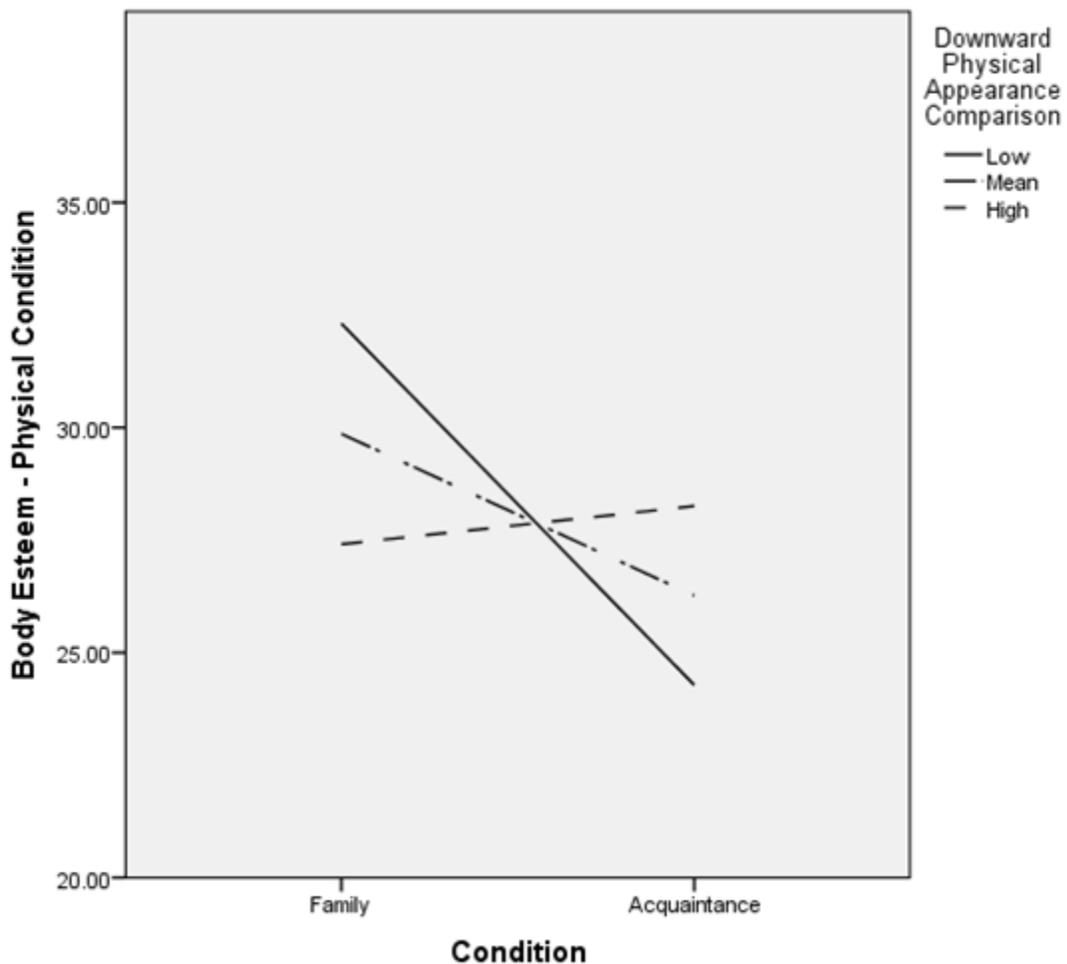


Figure 2. Simple slopes of the regression of body esteem (physical condition) on condition at three levels of downward physical appearance comparison tendencies.

The interaction between condition and downward physical appearance comparison tendencies significantly accounted for a proportion of the variance on body esteem regarding weight concern, $\Delta R^2 = 0.07$, $b = .40$, $t(83) = 2.55$, $p = .01$. Therefore, support for a moderation effect was found (see Figure 3). Examination of the conditional effect values showed an effect wherein lower levels of trait tendencies to compare one's physical appearance to others' appearance together with membership in the family member condition enhanced state body esteem regarding weight concern. Therefore, conversely, lower DPACS together with membership in the acquaintance condition worsened body esteem regarding weight concern. When DPACS was low, there was a significant negative relationship between condition and body esteem regarding weight concern, $b = -9.22$, 95% CI [-14.18, -4.26], $t = -3.7$, $p < .001$. At the mean value of DPACS, there was a significant negative relationship between condition and body esteem regarding weight concern, $b = -4.71$, 95% CI [-8.23, -1.19], $t = -0.08$, $p = .01$. When DPACS was high, there was a non-significant negative relationship between condition and body esteem regarding weight concern, $b = -.2$, 95% CI [-5.19, 4.79], $t = -0.08$, $p = .94$. These results tell us that the relationship between active social media engagement condition and body esteem regarding weight concern only emerges for people who have low-to-mid levels of downward physical appearance tendencies.

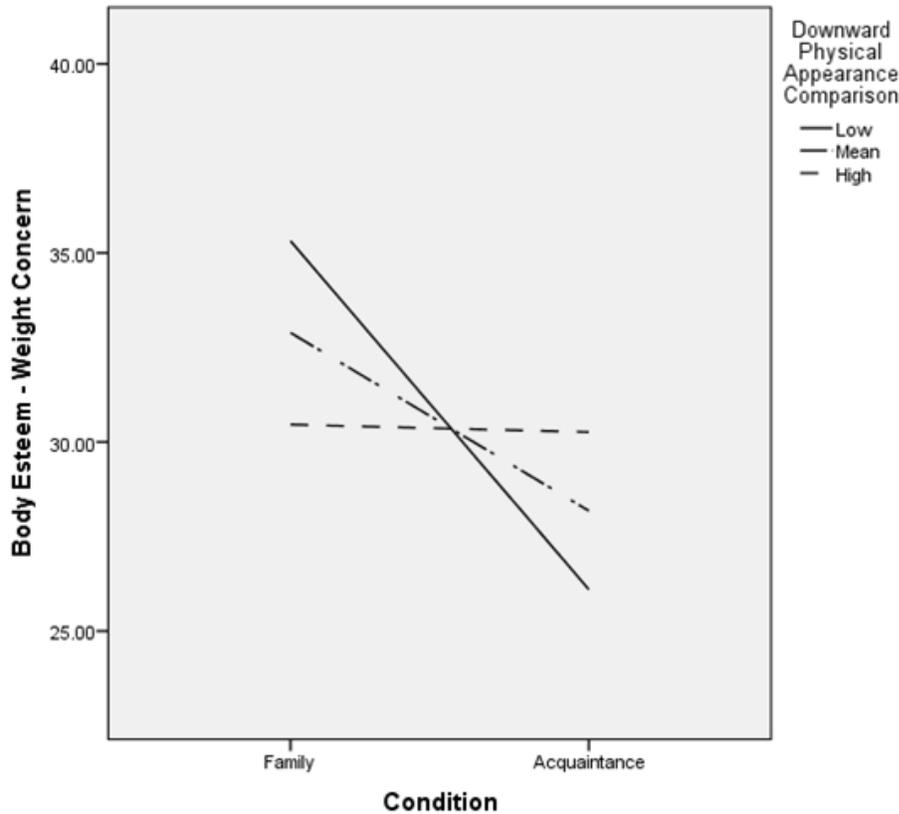


Figure 3. Simple slopes of the regression of body esteem (weight concern) on condition at three levels of downward physical appearance comparison tendencies.

The interaction between condition and downward physical appearance comparison tendencies did not significantly account for a proportion of the variance on SSES, although it trended toward significance, $\Delta R^2 = 0.03$, $b = .39$, $t(80) = 1.68$, $p = .10$. No other relationships were moderated by downward physical appearance comparison tendency.

Appearance Investment Moderation

Results of a simple moderation analysis revealed that the interaction between condition and ASI-R-SES accounted for a significant proportion of the variance on body esteem regarding weight concern, $\Delta R^2 = 0.06$, $b = -0.62$, $t(76) = -2.50$, $p = .02$ (see Figure 4). Therefore, support

for a moderation effect was found. When ASI-R-SES was low, the interaction was non-significant, $b = -.02$, 95% CI [-4.9, 4.95], $t = .008$, $p = .99$. At the mean and high levels of ASI-R-SES, the interaction was significant, $b = -4.39$, 95% CI [-7.80, -.98], $t = -2.56$, $p = .012$; $b = -8.80$, 95% CI [-13.66, -3.94], $t = -3.60$, $p = .0006$. Hence, only when young women have average or high levels of beliefs that their personal worth is appearance-based is their weight concern affected by the social media engagement conditions.

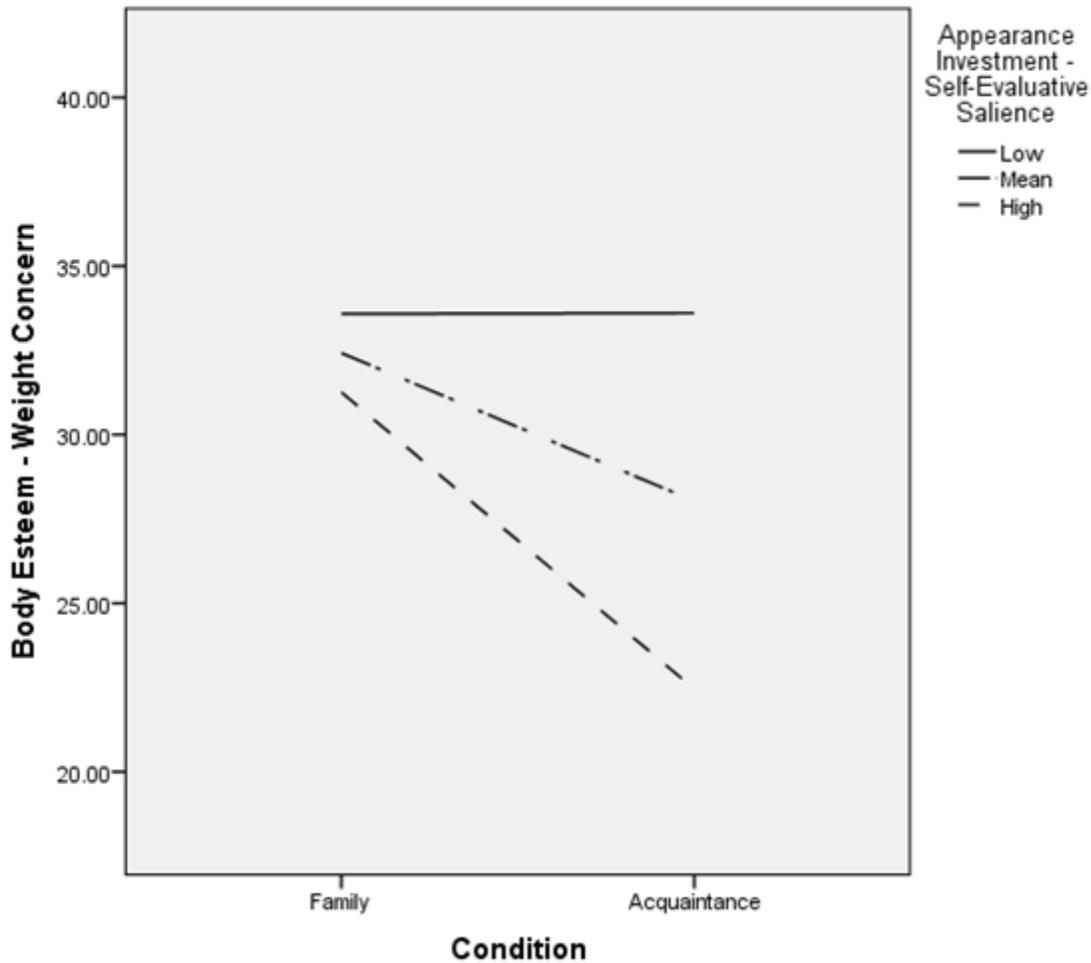


Figure 4. Simple slopes of the regression of body esteem (weight concern) on condition at three levels of self-evaluative salience of appearance investment.

The interaction between condition and ASI-R-SES significantly accounted for a proportion of the variance on BES-PC, $\Delta R^2 = 0.05$, $b = -0.42$, $t(76) = -2.24$, $p = .03$ (see Figure 5). When ASI-R-SES was low, the interaction was non-significant, $b = -.3762$, 95% CI [-4.12, 3.36], $t = -.20$, $p = .84$. At the mean and high levels of ASI-R-SES, the interaction was significant, $b = -3.37$, 95% CI [-5.96, -.78], $t = -2.56$, $p = .01$; $b = -6.37$, 95% CI [-10.05, -2.68], $t = -3.44$, $p = .0009$.

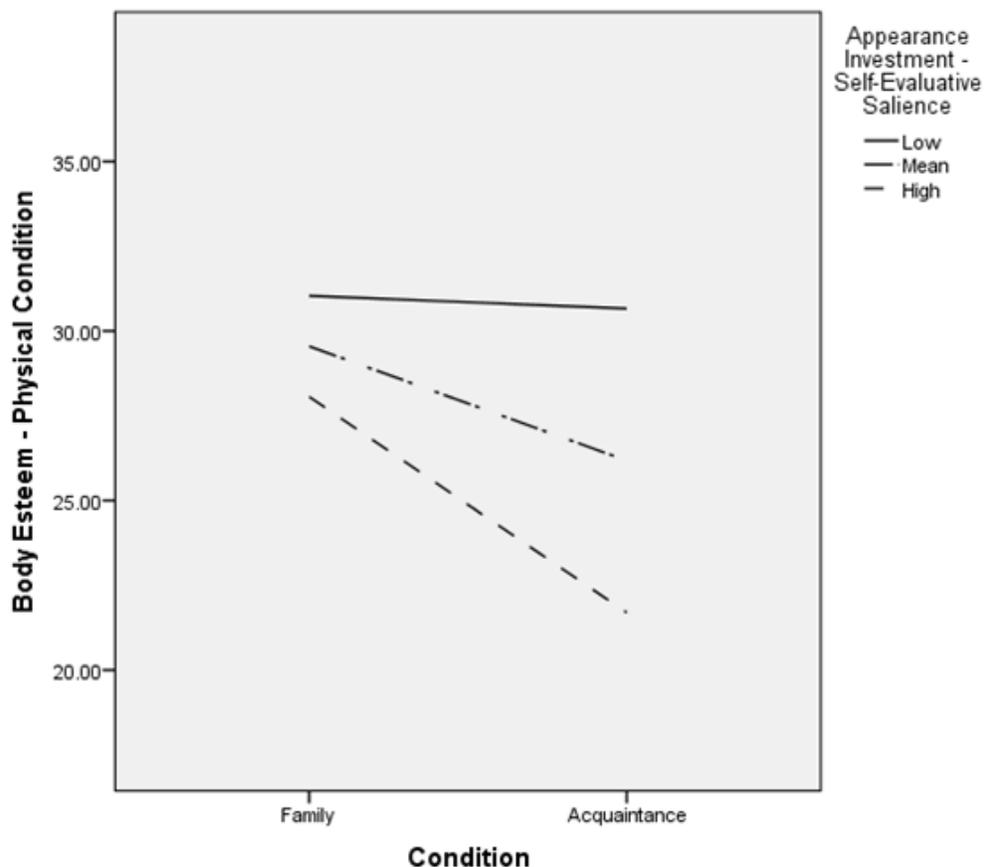


Figure 5. Simple slopes of the regression of state body esteem (physical condition) on condition at three levels of self-evaluative salience of appearance investment.

The interaction between condition and self-evaluative salience of appearance investment approached significance in terms of accounting for a proportion of the variance on state body image as measured by the BISS, $\Delta R^2 = 0.03$, $b = -0.06$, $t(76) = -1.83$, $p = .07$. The composite ASI-R, ASI-R-MS, and ASI-R-SES did not moderate any other relationships.

Drive for Thinness Moderation

Drive for thinness was examined as a moderator of the relationship between condition and change in body dissatisfaction. The interaction between DFT and condition was statistically significant, $F(1, 82) = 4.61$, $p = .04$, $\Delta R^2 = .05$ (see Figure 6). When scores on the DFT were low, there was a significant positive relationship between condition and change in body dissatisfaction, $b = 2.55$, 95% CI [.82, 4.28], $t = 2.93$, $p = .004$. At the mean value of DFT, there was a significant positive relationship between condition and change in body dissatisfaction, $b = 1.23$, 95% CI [.01, 2.45], $t = 2.01$, $p = .05$. When scores on the DFT were high, there was a non-significant negative relationship between condition and change in body dissatisfaction, $b = -.09$, 95% CI [-1.81, 1.63], $t = -0.08$, $p = .92$. These results tell us that the relationship between active social media engagement condition and change in body dissatisfaction really only emerge for people whose preoccupation with the pursuit of thinness is actually average or high. Recall that, conceptually, a low score on DFT means a *high* drive for thinness, as the first response option was *always* and the last was *rarely* and all but the one reverse-scored items are positively worded in the direction of being driven to pursue thinness.

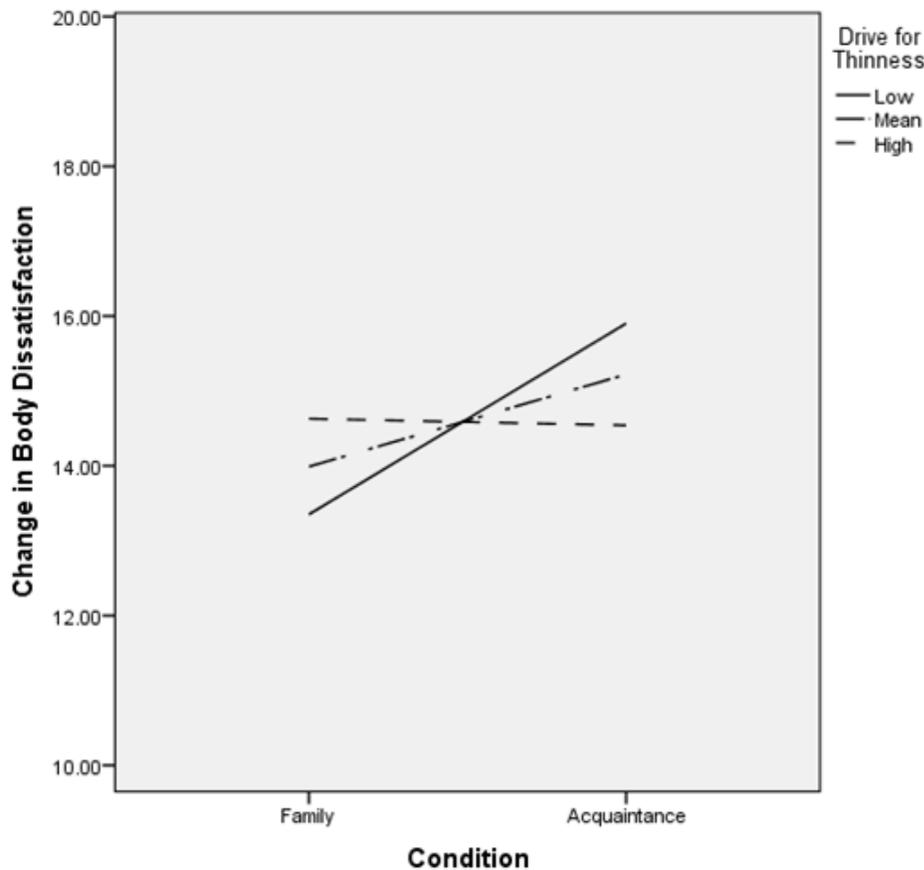


Figure 6. Simple slopes of the regression of change in body dissatisfaction on condition at three levels of drive for thinness.

DFT was examined as a moderator of the relationship between condition and change in overall appearance dissatisfaction. The interaction between DFT and condition fell short of statistical significance, $F(1, 82) = 0.90, p = .35, \Delta R^2 < .01$. DFT was examined as a moderator of the relation between condition and SSES. The interaction between DFT and condition was not significant, $F(1, 83) = 12.74, p = .64, \Delta R^2 = .002$. Separate regressions were run to assess DFT as a moderator between the SSES subscales and conditions; none of these interactions reached significance. DFT was examined as a moderator of the relation between condition and BISS. The interaction between DFT and condition fell short of statistical significance, $F(1, 86) = 0.13, p =$

.13, $\Delta R^2 = .002$. DFT did not moderate the relationship between condition and BES-SA, $F(1, 86) = 1.26, p = .27, \Delta R^2 = .01$. DFT did not moderate the relationship between condition and BES-PC, $F(1, 86) = 3.06, p = .08, \Delta R^2 = .006$. DFT did not moderate the relationship between condition and BES-WC, $F(1, 86) = 0.11, p = .75, \Delta R^2 = .001$. Therefore, average and high levels of drive for thinness only moderate the relationship between condition and change in body dissatisfaction.

Upward Physical Appearance Comparison Moderation

Tendency toward upward physical appearance comparison was examined as a moderator of the relation between condition and change in body dissatisfaction. The interaction between UPACS and condition was not statistically significant, $F(1, 79) = .26, p = .61$. UPACS was examined as a moderator of the relation between condition and change in overall appearance dissatisfaction with a regression analysis. The interaction between UPACS and condition fell short of statistical significance, $F(1, 79) = 1.11, p = .30$. UPACS was examined as a moderator of the relation between condition and SSES. The interaction between UPACS and condition was not significant, $F(1, 80) = 0.003, p = .95, \Delta R^2 < .0001$. Separate regressions were run to assess UPACS as a moderator between the SSES subscales and conditions; none of these interactions reached significance. UPACS was examined as a moderator of the relation between condition and BISS. The interaction between UPACS and condition was not significant, $F(1, 83) = 0.002, p = .97, \Delta R^2 = .00002$. UPACS did not moderate the relationship between condition and BES-SA or between condition and BES-WC. While UPACS did not moderate the relationship between condition and BES-PC, this relationship trended toward significance, $F(1, 83) = 2.67, p = .11, \Delta R^2 = .03$. These results indicate that, contrary to predictions, the tendency to make upward

physical appearance comparisons did not affect the relationship between social media engagement and risk factors for eating disorders.

Discussion

The current study sought to examine the experimental effects of active social media engagement (i.e., browsing and commenting on others' social media profiles) on various risk factors for eating disorders. I tested the potential moderating effects of appearance investment as an individual difference variable of interest. It was hypothesized that high trait appearance investment would moderate the effect of social media engagement on state body- and self-esteem as well as body dissatisfaction and overall appearance dissatisfaction. Support was found for a moderating effect of trait self-evaluative salience (an aspect of appearance investment) on the effects of experimental condition (attractive acquaintance versus non-peer family member) on body esteem (both perceived physical condition and weight concern). These moderation effects were significant only at average and high levels of self-evaluative salience of appearance investment. It is concluded, then, that young women who invest highly in beliefs or assumptions about the importance, meaning, and influence of their appearance in their life are more at risk than those with lower investment in such beliefs of having their feelings about their weight and physical condition negatively affected by engaging with the social media content of attractive distant peers. This is the first known experimental study to show such findings.

Other potential individual difference moderators were investigated in this study. It was hypothesized that young women who have a higher trait drive for thinness would have poorer state body- and self-esteem as well as higher body dissatisfaction and overall appearance dissatisfaction post-manipulation than young women who have lower trait drive for thinness. Partial support for drive for thinness as a moderator was found. That is, drive for thinness

moderated the relationship between social media condition and a worsening of body dissatisfaction. When young women's preoccupation with the pursuit of thinness is average or high, the effect of engaging with a distant peer versus a family member on increases to body dissatisfaction is significant, whereas this effect is not significant at low levels of trait drive for thinness. This is the first known study to examine drive for thinness as a potential individual difference moderator of effects of social media use on body image concerns. No other moderation effects of drive for thinness were found.

One exploratory hypothesis was that participants who have a tendency to make downward appearance comparisons would have different state body- and self-esteem as well as different body dissatisfaction post-manipulation than participants who do not have this tendency. Partial support for this prediction was found. Post-manipulation, participants in the acquaintance condition who had low and average but not high trait tendencies to make downward appearance comparisons had lower appearance self-esteem, lower body esteem regarding weight condition, and lower body esteem regarding physical condition than participants with the same levels of trait downward physical appearance comparison tendencies in the family member condition. That is, the relationships between active social media engagement condition and state appearance self-esteem, condition and state physical condition body esteem, and condition and state body esteem regarding weight concern only emerge for people who have low or average levels of downward physical appearance tendencies. This may be because when young women with low or average downward physical appearance comparison tendencies actively engaged with family members on social media, they experienced a novel situation which they saw as encouragement to compare themselves with a downward target, and subsequent to this novel experience, their appearance self-esteem and body esteem regarding physical condition and weight concern were

bolstered. By comparison, when young women with low or average downward physical appearance tendencies engage with upward comparison targets (that is, attractive distant peers), a familiar experience, their appearance self-esteem decreases, and they experience disturbances in weight concern and feelings about their physical condition.

Hypotheses Not Supported by the Results

Several of the *a priori* hypotheses were not supported by the results. Aside from physical condition and weight concern body esteem, self-evaluative salience of investment in appearance did not moderate any other relationship between condition and the other body image and self-esteem measures. Lack of support for these hypotheses could be due to the limitations of the visual analog scales and an outdated measure of sexual attractiveness, which does not include items that are frequently seen in social media images (that is, head hair and skin condition), being used in the current study. In addition to significant results involving state body image being interpreted with caution due to low internal reliability, non-significant results involving this measure should be interpreted with caution as well. Recall that the interaction between condition and self-evaluative salience of appearance investment approached significance in terms of accounting for a proportion of the variance on state body image. It is impossible to say if the self-evaluative importance of investing in one's appearance would have moderated the effect of condition on state body image had the measure of state body image had better internal consistency. With regards to self-evaluative salience of appearance investment not moderating the effect of condition on any aspect of state self-esteem, it may be that the effect on self-esteem, especially appearance self-esteem, of interacting with a social media acquaintance as opposed to a family member is so large that it affected most young women, not just those high in self-evaluative salience of appearance investment. Recall that the effect size of condition on

appearance self-esteem was quite large ($\eta_p^2 = .25$). Social and performance self-esteem are not as related to appearance investment as appearance self-esteem, so perhaps that is why no to self-evaluative salience of appearance investment moderation effects were found between condition and these variables.

It was expected that, as compared to the family member condition manipulation, the acquaintance condition manipulation would cause participants to experience a larger worsening of state body dissatisfaction and overall appearance dissatisfaction. As neither of the visual analog scales change scores differed between conditions, this part of the primary hypothesis was not supported. However, a follow-up exploratory ANOVA showed that when condition's effect on change in body dissatisfaction was considered alone after the removal of the same two extreme outliers as were the multivariate outliers, there was support for the hypothesis that the acquaintance condition manipulation would cause participants to experience a larger worsening of state body dissatisfaction, $F(1, 84) = 4.04, p = 0.05, \eta_p^2 = 0.05$. However, a separate follow-up exploratory ANOVA did not show support for the hypothesis that the acquaintance condition manipulation would cause participants to experience a larger worsening of state overall appearance dissatisfaction, $F(1, 84) = 2.28, p = .13, \eta_p^2 = .03$. The mix of body dissatisfaction and overall appearance dissatisfaction being presented rather than overall appearance dissatisfaction and weight dissatisfaction could have affected this study's results. Results may have been different if the visual analog scales of overall appearance dissatisfaction and weight dissatisfaction were used and combined to form a measure of body dissatisfaction instead. One recent study on body image and attractive versus unattractive targets on Facebook that used only the question, "How satisfied are you with your physical appearance at this very moment?" in a visual analog format found that young women who looked at attractive targets on Facebook were

less satisfied with their appearance than those who looked at the unattractive target (Kim & Park, 2016). Rather than combine global aspects with specific aspects of body dissatisfaction, future studies should consider either only asking globally about body dissatisfaction or combining multiple specific aspects of body dissatisfaction to form a global measure. One example of a specific aspect of body dissatisfaction to consider including as a visual analog scale in future studies is facial features, as faces are often featured in social media images, such as selfies (Brown & Tiggemann, 2016).

It was hypothesized that, overall, as a result of the manipulations, participants in the acquaintance condition would also experience lower state body esteem as compared to participants in the family member condition. As no aspects of body esteem differed between conditions, this part of the primary hypothesis was not supported. However, body esteem regarding physical condition, weight concern, and sexual attractiveness has changed over time (Franzoi & Shields, 1984; Frost, Franzoi, Oswald, & Shields, 2017). The year after this study was run, a revised measure of body esteem was published that confirms a generational shift in cultural body ideals has occurred since the 1980s (Franzoi & Shields, 1984; Frost et al., 2017). Although many of the items that contribute to each aspect of body esteem have stayed the same over time, some items that loaded on to the weight concern and physical condition factors in the 1980s are no longer relevant or now load on to the sexual attractiveness factor (e.g., buttocks used to be a weight concern item but is now a sexual attractiveness item) and so have been deleted from the contemporary measure of body esteem. In addition to “buttocks,” sexual attractiveness now also includes “head hair” and “skin condition,” which are two components that may be quite salient while viewing images on social media, as people participate in active social media engagement with selfies and other Instagram photos containing faces more than

other social media images (Bakhshi, Shamma, & Gilbert, 2014). Future studies on social media and body esteem should take this into consideration.

The finding that social media engagement condition was, overall, not associated with weight concern, perceived physical condition, or feelings of sexual attractiveness may be due to the fact that there are more portrait images of women available on social media, thus making body-related comparisons with other women less relevant than comparisons of head and facial features (Haferkamp, Eimler, Papadakis, & Kruck, 2012). Although participants were instructed to find and leave a comment on a full-length photo on either an acquaintance's or family member's social media pages, they were also told to stay on and browse this contact's social media pages until the five minutes were up. During this time, it is likely they would have encountered photos featuring just the face of their contact. People often upload headshots as their profile pictures on social media, and when they went to their contact's profile page, the participants would have seen the profile picture of the social media contact they interacted with in this study. Another conceivable reason for the null effects on body esteem of social media engagement condition is the possibility that a wider range of body types are available for comparison on social media than in traditional media.

Neither appearance investment overall nor the motivational salience of appearance had any moderating effects in this study. Self-evaluative salience of appearance is a dysfunctional association of appearance to self-worth and is predictive of women's real-life negative body image experiences and thought processes (Jakatdar, Cash, & Engle, 2006; Melnyk, Cash, & Janda, 2004). However, motivational salience of appearance is not as related to body image dysfunction and may in fact just indicate a benign, adaptive interest in making efforts to feel attractive (Jakatdar et al., 2006; Melnyk et al., 2004; Tylka & Wood-Barcalow, 2015). Therefore,

it is not surprising that this aspect of appearance investment did not moderate any effects in this study.

It was hypothesized that young women who have a trait tendency to make upward appearance comparisons would have poorer state body- and self-esteem as well as higher body dissatisfaction and overall appearance dissatisfaction post-manipulation than young women who do not have these tendencies. Contrary to predictions, having a high trait tendency toward upward appearance comparisons did not moderate any relationships between social media engagement condition and any of the body image or self-esteem variables. The facets of body esteem have changed over time. The sexual attractiveness factor now has more relation to parts of the body that are often featured in selfies, such as head hair and skin condition, and physical condition no longer relates to components that are less discernable from photographs, such as agility and reflexes (Frost et al., 2017). Similar to the present study, another experimental study on social media and body image failed to find a moderating effect of appearance comparison tendencies on website condition and measures of state weight and shape discrepancies or post-manipulation body dissatisfaction (Fardouly et al., 2015). However, Fardouly and colleagues (2015) did find that, for women high in a combination of both downward and upward appearance comparison tendency, browsing Facebook led to more face, hair, and skin-related discrepancy than did spending time on an appearance-neutral control website. Selfies, which highlight facial features, are the most posted category of photos posted on Instagram (Hu, Manikonda, & Kambhampati, 2014). Therefore, using a body esteem measure that focuses more on head and facial features or appearance discrepancies may be more appropriate in social media and body image research than the now-outdated body esteem measure used herein (Dittmar, Beattie, & Friese, 1996; Halliwell & Dittmar, 2006).

Unlike comparison tendencies moderating the relationship between exposure to traditional media containing attractive and thin-ideal images and body-focused anxiety, the current study did not find that women who more frequently compare their appearance to upward-comparison others are more negatively affected by exposure to social media (Dittmar & Howard, 2004). Contrary to predictions, having a high tendency toward upward appearance comparisons did not moderate any relationships between active social media engagement condition and any aspects of state self-esteem. This hypothesized moderation was nowhere near significant. Nevertheless, recall that there was a very large main effect of condition on appearance self-esteem, indisputably the aspect of self-esteem most related to body image. Together, these results indicate that, regardless of upward appearance comparison tendencies, young women inevitably judge the worth of their appearance lower as a result of interacting with distant peers on social media. It should also be noted that the mean and median response to the items measuring upward physical appearance tendency was very close to “somewhat agree.” That is, on average, participants reported at least some trait tendency to upward appearance comparison. Perhaps this trait has become more widespread in contemporary society, which may also be a reason for the non-significance findings in regard to upward appearance comparison moderation.

Social Comparison and Social Media Engagement

Together with the main effects of condition on state appearance self-esteem, the downward physical appearance tendencies moderation that occurs between social media engagement condition and appearance self-esteem is novel and theoretically interesting. It should be noted that the mean response on the downward physical appearance comparison scale was close to “somewhat disagree,” indicating that even the young women with average downward physical appearance comparison tendencies gave rather low endorsement of statements such as

“I tend to compare my body to those who have below average bodies” (O’Brien et al., 2009). It may be that young women with low or average trait downward physical appearance comparison tendencies in the family member condition experienced a novel situation in which they saw being asked to identify someone they did not consider *more* attractive than themselves as encouragement to compare themselves with a downward target, rather than a lateral or downward target, and subsequent to this novel experience, their appearance self-esteem and body esteem regarding physical condition and weight concern were bolstered. Unlike a prevention program that uses downward comparison (albeit on a non-appearance dimension) to mitigate the negative effects of traditional thin-ideal media, the findings regarding high trait tendency to compare one’s physical appearance to downward targets does not indicate support for social media prevention programs to encourage downward comparisons (Lew, Mann, Myers, Taylor, & Bower, 2007). After all, when tendency toward downward physical appearance comparison is high, appearance self-esteem was essentially the same after either type of social media engagement in this study. Although downward social comparisons should theoretically increase self-evaluation, that does not appear to be the case at above average levels of trait downward physical appearance tendency in this study.

Although it is assumed these results generalize to young women with typical BMIs, it is unknown how the results would be impacted if participants in the study had symptoms of an eating disorder. In the URPP pre-screen, “rarely” was the most common response to each of the following questions: (1) How often are you dieting? (2) Do you eat sensibly in front of others and splurge when you are alone? (3) Do you have feelings of guilt after overeating? and (4) Do you give too much time and thought to food? Only 21% of the sample answered with a combination of only “always” and “sometimes” to the questions regarding high drive for

thinness, a core symptom of eating disorders. Therefore, while there is no way of determining definitively if participants in the study had an eating disorder, it can be assumed that most did not. A suggested future direction for research would be to repeat the current study with a population displaying eating disorder symptomology to determine if the results obtained herein extend or are even amplified in an eating disordered population. If similar results were attained, that may indicate support for placing limits on social media use during eating disorder recovery.

Limitations of the Study

As the scale used to measure state body image had a lower Cronbach's alpha than anticipated, the main effects of condition on state body image should be interpreted with caution. Perhaps encountering a positive-to-negative item after answering only one negative-to-positive item confused participants. The second item of this scale asks about state dis/satisfaction with body size and shape and is the only item that explicitly refers to the whole body and possibly the least changeable aspects of appearance. Additionally, in the development of this scale, the Cronbach's alpha was lower in neutral contexts than either positive or negative contexts (Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002). It is possible these least changeable aspects of body image and confusion, along with participants in the family member condition regarding their social media interaction as a neutral context, may have contributed to a lower Cronbach's alpha for the state body image measure (Cash et al., 2002). Despite this limitation, the results of the current study points to a negative consequence on state body image of interacting with distant peers on appearance-focused social media.

Heinberg and Thompson (1995) first reported creating only overall appearance dissatisfaction and body dissatisfaction visual analog scales as measures of state body dissatisfaction but later reported combining an overall appearance dissatisfaction and a weight

dissatisfaction visual analog scale into one measure of body dissatisfaction. Therefore, the visual analog scales used in the current study may not have been the same items the initiators of the body dissatisfaction visual analog scale used. Other body image researchers have claimed to follow Heinberg and Thompson's (1995) lead by using and averaging overall appearance dissatisfaction and weight dissatisfaction visual analog scales to create a body dissatisfaction measure (Etu & Gray, 2010; Tiggemann & McGill, 2004). Social media and body image researchers also have used a combination of overall appearance dissatisfaction, weight dissatisfaction, and facial features to measure body dissatisfaction (Brown & Tiggemann, 2016). Others have combined various aspects of body image to measure body dissatisfaction on the whole. Thus, perhaps this study's participants were confused by first being asked about their body dissatisfaction overall and then being asked about one aspect of body dissatisfaction, that is, their overall appearance dissatisfaction. In future studies, using the three visual analog scales that Brown and Tiggemann (2016) used or the single-item visual analog scale, "How satisfied are you with your physical appearance at this very moment?" (Kim & Park, 2016) may be more suitable measures of body dis/satisfaction than those used in the current study.

Seeing as Franzoi and Shield's (1984) multidimensional measure of body esteem was revised after the current study took place, the most contemporary concepts of aspects of body esteem were not considered in the current study (Frost et al., 2017). Future studies on social media and body esteem should use the most contemporary measure of body esteem to reflect the current cultural standards that define attractive bodies. Additionally, the measure of body esteem used in this study is not an explicitly state measure, so it is possible that participants in this study answered according to how they normally feel. Future studies could include a modification of the

instructions to ask participants about how they feel about parts or functions of their body *at the present moment* in an effort to capture *state* body esteem.

As the drive for thinness measure was placed at the end of the body image and self-esteem questionnaire rather than in the online study, it should be acknowledged that completing the dependent measures prior to completing a measure of drive for thinness may have influenced how participants answered these questions. Therefore, this could have affected potential moderation between condition and the other body image and self-esteem variables. In future studies, all hypothesized moderators should be measured well in advance of the social media engagement manipulation.

As two social media platforms were used in this study, it is not possible to determine whether the same manipulations using exclusively Facebook or exclusively Instagram would have yielded the same results. Participants reported that the Instagram portion of the lab session was very representative of how they typically use Instagram, whereas they reported the Facebook portion of the lab session as just somewhat to moderately representative of their typical use of Facebook. Although beyond the scope of this study, future qualitative research could delve into the differences between how each platform is used to determine how to make lab sessions of experimental research on social media and body image more aligned with typical use. Much of the correlational research on body image and social media has been done using Facebook rather than Instagram or a combination of both, so using Facebook was fitting in this study's design. However, Instagram is a more photo-based application and is gaining traction, recently increasing to 700 million users, the last 100 million of which joined faster than ever (Instagram, 2017). Using a combination of both platforms was intended to reflect both the ever-changing landscape of popularity of different social media applications and a more naturalistic

environment. Currently, individuals can have several social media applications installed on their smartphones, easily transitioning back and forth from one platform to the next.

Conclusions

Unlike other studies, rather than manufacturing an artificial simulation of social media engagement, this is the first known study to experimentally examine ecologically valid active social media engagement. Importantly, this is also the first known study to show a causal effect of actively engaging with young women's own distant peers on social media of worsening state self-esteem and body image. A pattern was clear. Condition accounted for a medium or large proportion of the variance in each of the state self-esteem subscales and state body image. That is, every significant main effect of active social media engagement condition was either a medium or large effect. This is striking, as effects of traditional media exposure on body image are usually only small to modest (Levine & Chapman, 2011; Perloff, 2014). In particular, in the current study, the largest effect size was found for the relationship between social media engagement condition and state appearance self-esteem. This indicates that when young women participate in image-focused active engagement with distant peers (as opposed to non-peer relatives) on social media, this activity causes decreased state appearance self-esteem, a factor that is related to dietary restraint and dieting behaviour (Heatherton & Polivy, 1991) and which is a core feature of clinically significant disordered eating. Social media use is extremely high worldwide. At a time when the opportunities to participate in active social media engagement with distant peers are ever-increasing, knowing the psychological effects of doing so are important.

More research is needed to determine what it is about interacting with non-peer relatives on social media that protects young women's appearance self-esteem from the same detrimental

effects as interacting with attractive distant peers. Social media literacy programs could incorporate this study's findings, informing young women about the negative effects on their self-esteem and body image of using social media to interact with people they do not know well as opposed to using social media to actually socialize with close others, such as their family members.

Increasingly, young people are opting out of Facebook, preferring more image-based social media such as Instagram and Snapchat instead (Castillo, 2016; Facebook, 2017; Matthews, 2014). At the same time, more older adults are flocking to Facebook but not Instagram (Duggan et al., 2016). Young adults worry about privacy and embarrassment when considering having older family members on Facebook (West et al., 2009). Based on these movements, young people are probably abandoning Facebook because they do not want their parents and other older family members to be able to see these young people's Facebook activity. Hence, these young people have adopted platforms like Instagram to avoid family on social media. There are fewer older people on Instagram than Facebook. Accordingly, there may be fewer family members on Instagram. Therefore, in all likelihood, young women are viewing mainly upward physical appearance comparison targets, such as acquaintances, friends, and celebrities, which could have detrimental effects on their body image, even regardless of their appearance investment, drive for thinness, or comparison tendencies (Duggan et al., 2016). As users of appearance-focused social media such as Instagram increase exponentially, so do the opportunities to engage in appearance-focused comparisons with distant peers. On social media, it is common to make connections (e.g., become "friends") with even the most barely acquainted people (Boyd, 2006). The results of the current study should be delineated to social media users so they become aware of the negative causal effects on eating disorder risk factors of this typical way of using social media.

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Social Media and Various Relationships
Information and Consent

Principal Investigator: Jacqueline Hogue

Primary Supervisor: Dr. Jennifer Mills

Purpose: We invite you to participate in a research study about understanding different ways people use social media in various relationships.

Study Procedures: If you choose to participate in the study, you will be asked to identify someone that has both active Facebook and Instagram accounts. In an in-person session, you will be asked to look at and comment on their social media posts, although the experimenter will not need to see your comments online. You will also be asked to complete some measures about your personality and attitudes, social media use, and also some demographic information (e.g. age, gender). The entire study should take less than one hour to complete. Today's online session should take less than 10 minutes and a later in-person session should take about 50 minutes. Today you will be asked to complete an online questionnaire. Later, at the end of the in-person experimental session, you will receive an information sheet that explains the study in more detail. We urge you to not discuss the purpose or details of this study with other prospective participants in order to preserve the validity of the study.

Risks & Discomforts: There are no anticipated risks involved in participating in this study that exceed those you might encounter in your daily life.

Benefits: Benefits associated with participation in this study include expansion of knowledge of psychological research, as well as a credit toward your final grade in PSYC 1010 (1% toward your final grade). **Voluntary Participation & Withdrawal:** Your participation is voluntary. You may decline answering any of the questions and you are free to stop participating at any time prior to the completion of the experimental session without penalty, and you will still receive your undergraduate research participant pool (URPP) credit for introductory psychology. Should you withdraw from the study, all data generated as a consequence of your participation shall be destroyed.

Confidentiality: Your identity will be kept confidential. You will not be asked to put your name on anything but a consent form. Instead, all research materials (e.g. questionnaires) will be

Appendix A: Part One Information and Consent Form

assigned an arbitrary number. The results from this study will be used in a Master's thesis and may be presented in papers and talks related to this research and will benefit psychological research. Data will be stored in a secure location and only viewed by the authorized researchers. Data will be retained for a period of at least five years as dictated by the American Psychological Association. Hard-copy data will be disposed of by shredding questionnaires and consent forms. Electronic data will be disposed of by the deletion of the digital files.

Questions: This research has been reviewed and approved by the Human Participants Review Sub-Committee and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, you may contact the Office of Research Ethics. If you have any questions or concerns regarding the research in general or your role in this study, please contact the researcher or her supervisor. You may also contact the Psychology Graduate Program office.

Consent: I have read about the measures and procedures of the study and understand it in full. I agree to participate in the study and I give consent to have the information used for purposes of the study. I have been assured that Jacqueline Hogue or Dr. Mills will respond appropriately to any questions that I may have. I have been fully informed of the potential risks and/or benefits of the study.

Please enter your URPP code: _____

Do you consent to participate in this study?

- I consent to participant in this study
- I do not consent to participant in this study

Appendix B: Social Media Usage Questionnaire

Do you have both Facebook and Instagram accounts?

- Yes
- I don't have either Facebook or Instagram accounts
- I only have Facebook
- I only have Instagram

On a typical day, how often do you check Facebook (even if you are logged on all day)?

- Not at all
- Once a day
- Every few hours
- Every hour
- Every 30 minutes
- Every 10 minutes
- Every 2 minutes

Overall, how long do you spend on Facebook on a typical day?

- 5 minutes or less
- 15 minutes
- 30 minutes
- 1 hour
- 2 hours
- 4 hours
- 6 hours
- 8 hours
- 10 hours or more

Appendix B: Social Media Usage Questionnaire

How often do you “like/react to” Facebook posts?

- Several times a day
- About once a day
- 3 to 5 days a week
- 1 to 2 days a week
- Every few weeks
- Less often than every few weeks

How often do you comment on others' Facebook posts?

- Several times a day
- About once a day
- 3 to 5 days a week
- 1 to 2 days a week
- Every few weeks
- Less often than every few weeks

Appendix B: Social Media Usage Questionnaire

When using Facebook, what do you do on a regular basis? Check all that apply.

- Look at photos
- Comment on or “like/react to” status updates
- Comment on or “like/react to” friend’s photos
- Use notes
- Use events
- Use chat or send messages
- Post your own photos
- Post your own status updates
- Find friends
- Look at business/company pages
- Use apps and games through Facebook
- Use check-ins
- View or post in groups
- Comment on or “like/react to” non-status-update posts (e.g. Videos, links to new articles, blogs, etc.)

On a typical day, how often do you check Instagram (even if you are logged on all day)?

- Not at all
- Once a day
- Every few hours
- Every hour
- Every 30 minutes
- Every 10 minutes
- Every 2 minutes

Appendix B: Social Media Usage Questionnaire

Overall, how long do you spend on Instagram on a typical day?

- 5 minutes or less
- 15 minutes
- 30 minutes
- 1 hour
- 2 hours
- 4 hours
- 6 hours
- 8 hours
- 10 hours or more

How often do you “like” Instagram posts?

- Several times a day
- About once a day
- 3 to 5 days a week
- 1 to 2 days a week
- Every few weeks
- Less often than every few weeks

How often do you comment on others' Instagram posts?

- Several times a day
- About once a day
- 3 to 5 days a week
- 1 to 2 days a week
- Every few weeks
- Less often than every few weeks

Appendix B: Social Media Usage Questionnaire

When using Instagram, what do you do on a regular basis? Check all that apply.

- Look at photos
- Comment on or “like” photos/videos
- Post your own photos/videos/Instagram Stories
- Find friends
- Find accounts to follow
- Send photos to friends through Instagram Direct
- Use Instagram Direct to send messages
- Look at business/company pages
- Use Boomerang to share mini videos
- Share photos to other apps (Twitter, Facebook, Tumblr, Flickr, Swarm)
- Use Hashtags
- Tag your friends
- Tag your location
- Advertise/brand rep/sell merchandise

How do you access your Instagram account?

- Only through the mobile app on my smartphone, never on a computer
- Only through a computer, never on a smartphone app
- Through both the smartphone app and computer

Appendix C: Upward Physical Appearance Comparison Scale

Please rate how strongly you agree or disagree with each of these statements.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Somewhat Disagree
- 4 = Neither Agree Nor Disagree
- 5 = Somewhat Agree
- 6 = Agree
- 7 = Strongly Agree

1. I compare myself to those who are better looking than me rather than those who are not. ____
2. I tend to compare my own physical attractiveness to that of magazine models. ____
3. I find myself thinking about whether my own appearance compares well with models and movie stars. ____
4. At the beach or athletic events (sports, gym, etc.) I wonder if my body is as attractive as the people I see there with very attractive bodies. ____
5. I tend to compare myself to people I think look better than me. ____
6. When I see a person with a great body, I tend to wonder how I 'match up' with them. ____
7. When I see good-looking people, I wonder how I compare to them. ____
8. At parties or other social events, I compare my physical appearance to the physical appearance of the very attractive people. ____
9. I find myself comparing my appearance with people who are better looking than me. ____

Appendix C: Upward Physical Appearance Comparison Scale

10. I compare my body to people who have a better body than me. ____

Appendix D: Downward Physical Appearance Comparison Scale

Please rate how strongly you agree or disagree with each of these statements.

1 = Strongly Disagree

2 = Disagree

3 = Somewhat Disagree

4 = Neither Agree Nor Disagree

5 = Somewhat Agree

6 = Agree

7 = Strongly Agree

1. When I see a person who is physically unattractive I think about how my body compares to theirs. ____
2. I tend to compare my body to those who have below average bodies. ____
3. At the beach, gym, or sporting events I compare my body to those with less athletic bodies. ____
4. I compare myself to people less good looking than me. ____
5. I think about how attractive my body is compared to overweight people. ____
6. At parties, I often compare my looks to the looks of unattractive people. ____
7. I often compare myself to those who are less physically attractive. ____
8. I tend to compare my physical appearance with people whose bodies are not as physically appealing. ____

Appendix E: Appearance Schemas Inventory - Revised

The statements below are beliefs that people may or may not have about their physical appearance and its influence on life. Decide on the extent to which you personally disagree or agree with each statement and enter a number from 1 to 5 on the space on the left. There are no right or wrong answers. Just be truthful about your personal beliefs.

- 1 = Strongly Disagree
- 2 = Mostly Disagree
- 3 = Neither Agree Nor Disagree
- 4 = Mostly Agree
- 5 = Strongly Agree

- ___ 1. I spend little time on my physical appearance.
- ___ 2. When I see good-looking people, I wonder about how my own looks measure up.
- ___ 3. I try to be as physically attractive as I can be.
- ___ 4. I have never paid much attention to what I look like.
- ___ 5. I seldom compare my appearance to that of other people I see.
- ___ 6. I often check my appearance in a mirror just to make sure I look okay.
- ___ 7. When something makes me feel good or bad about my looks, I tend to dwell on it.
- ___ 8. If I like how I look on a given day, it's easy to feel happy about other things.
- ___ 9. If somebody had a negative reaction to what I look like, it wouldn't bother me.
- ___ 10. When it comes to my physical appearance, I have high standards.
- ___ 11. My physical appearance has had little influence on my life.
- ___ 12. Dressing well is not a priority for me.
- ___ 13. When I meet people for the first time, I wonder what they think about how I look.
- ___ 14. In my everyday life, lots of things happen that make me think about what I look like.
- ___ 15. If I dislike how I look on a given day, it's hard to feel happy about other things.
- ___ 16. I fantasize about what it would be like to be better looking than I am.
- ___ 17. Before going out, I make sure that I look as good as I possibly can.
- ___ 18. What I look like is an important part of who I am.
- ___ 19. By controlling my appearance, I can control many of the social and emotional events in my life.
- ___ 20. My appearance is responsible for much of what's happened to me in my life.

Appendix F: Demographics

Demographics

This information is helpful to ensure we have a representative sample of participants in our study.

What is your gender?

- Male
- Female
- Other (please specify): _____
- What is your sexual orientation? _____
- What is your age? _____

How many years have you been a university student? If this is your first year in university, choose "1."

- 1
- 2
- 3
- 4
- 5
- 6+

Is English your first language?

- Yes
- No

(If Yes was selected, then the survey automatically skipped to ethnic origin.)

Do you consider yourself to be fluent in English?

- Yes
- No

(This question was only displayed if "No" was selected in response to: "Is English your first language?")

How long have you spoken English?

- (This question was only displayed if "No" was selected in response to: "Is English your first language?")

Appendix F: Demographics

Please indicate your ethnic origin by choosing one of the categories listed below. Ethnic origin refers to the ethnic or cultural group(s) to which your recent ancestors belonged. Ethnic origin pertains to ancestral identity or background and should not be confused with citizenship or nationality. If you have multiple ethnic origins, then please select the one with which you most strongly identify; If this is not possible, then leave this question blank.

- European (including British Isles)
- East Asian (E.g., China, Hong Kong, Korea, Japan)
- South Asian (E.g., India, Pakistan, Bangladesh)
- Middle Eastern
- African
- African-American
- Latin, Central, and South American
- Hispanic-American
- Pacific Islands (E.g., Philippines, Hawaii)
- Caribbean
- Indigenous (E.g., First Nation, Métis, or Inuit)
- Other — please specify: _____

Appendix G: Reminder to Complete Part Two

Thank you for completing the first part of this two-part study!

It's important for our study that you participate in Part 1 and Part 2. So, please remember to go back to the "Studies" section of the URPP website and schedule a time for Part 2: Social Media & Various Relationships (the experimental lab portion of this study).

You will receive the other 0.5 credit for participating in the experimental lab portion of this two-part study.



INFORMATION AND CONSENT FORM

Social Media & Various Relationships

Purpose: The purpose is to better understand different ways people use social media in various relationships.

Researchers: Jacqueline Hogue and Dr. Jennifer Mills

Study Procedures: Participation involves completing an online survey and an experimental lab session. If you choose to participate in the study, you will be asked to identify one of your contacts who has active Facebook and Instagram accounts. You will be asked to sign into your Facebook and Instagram accounts on a lab computer and look at and comment on this person's social media posts, although the experimenter will not need to see your comments online. You will also be asked to complete some measures about your personality and attitudes, social media use, and also some demographic information (e.g. age, sexual orientation, etc.). The entire study should take less than one hour to complete. Today's session should take about 50 minutes. Today you will only be asked to complete an online questionnaire.

Potential Risks & Benefits: Any probability and magnitude of discomfort anticipated in this study are not greater, in and of themselves, than those ordinarily encountered in daily life. The risks associated with participation are minimal, however, and similar to those associated with many e-mail programs, such as Hotmail, and social utilities spaces. You will not be asked to put your name on anything other than a consent form. Instead, all research materials (e.g., questionnaires) will be assigned an arbitrary number. The results from this study will be used in a Master's thesis and may be presented in papers and talks related to this research and will benefit psychological research. Benefits associated with participation in this study include expansion of knowledge of psychological research, as well as a credit toward your final grade in PSYC 1010 (1% toward your final grade).

Confidentiality: Your identity as a participant will be kept strictly confidential but not anonymous, due to the fact that part of the study will be completed online, through a site that records the user's IP address. However, you will not be asked to provide any identifying information on the questionnaires. Thus, your responses will not be traced back to you. The online survey is being administered by Qualtrics, a U.S. Internet company. As such, your responses are subject to U.S. laws.

Data Storage: Data will be stored in a secure location and only viewed by the authorized

Appendix H: Part Two Information and Consent Form

researchers. Data will be retained for a period of at least five years as dictated by the American Psychological Association, and potentially indefinitely, in electronic form on a computer in a locked room. Data will be disposed of by shredding written questionnaires and consent forms. Data will be disposed of by the deletion of the digital files.

Contact Information: This research has been reviewed and approved for compliance to research ethics protocols by the Human Participants Review Sub-Committee. However, if you have any questions or concerns regarding your participation in this study, please contact Jacqueline Hogue or Dr. Jennifer Mills. If you care to contact an individual who is not connected with this study regarding your rights as a research participant, or have any questions about the consent process, please contact the Psychology Ethics Committee or the Office of Research Ethics.

Feedback: At the end of the lab session, you will receive information that explains the study in more detail. We urge you to not discuss the purpose or details of this study with other prospective participants in order to preserve the validity of the study. If you would like to receive written feedback about the results of the study once the data has been collected and analysed you may contact Jacqueline Hogue.

Consent: Your participation is voluntary. You may decline answering any of the questions and you are free to stop participating at any time prior to the completion of the experimental session without penalty, and you will still receive your undergraduate research participant pool (URPP) credit for Introductory Psychology. Should you withdraw from the study, all data generated as a consequence of your participation shall be destroyed. Your continued participation should be as informed as your initial consent, so feel free to e-mail us with any questions you may have regarding the survey or our research.

_____	_____	_____
Participant's signature	Participant's Name	Date
_____	_____	_____
Principal Investigator's signature	Principal Investigator's Name	Date

Appendix I: Pre-manipulation Body Dissatisfaction and Overall Appearance Dissatisfaction
Visual Analog Scales

URPP Participant Code: _____

First Personality Measure

To start off, we'd like you to complete a personality measure.

Do not spend too much time on either question and please do the questions in the order that they appear.

If you have any questions, please feel free to ask the Experimenter.

VAS BD

Place a vertical line (or, "tick") on the horizontal line below that shows how much dissatisfaction you feel about your body *at the present moment*.

None Very much

VAS OAD

Place a vertical line (or, "tick") on the horizontal line below that shows how much dissatisfaction you feel about your overall appearance *at the present moment*.

None Very much

Acquaintance

In order for us to understand different ways people use social media in various relationships, please write down the initials of a female acquaintance who:

a) You consider *more* attractive than yourself

and

b) Who has both Facebook and Instagram accounts.

and

c) Who is between 5 years younger or older than you. (This means she could even be your age.)

This person could be a classmate, a friend of a friend, or any other peer who is NOT a close friend or family member. Please make sure this acquaintance fits a), b), & c) above.

Your Acquaintance's Initials: _____

Your Relationship with this Acquaintance: _____

Appendix K: Identification of Family Member Instructions

Family

In order for us to understand different ways people use social media in various relationships, please write down the initials of a female family member who:

a) You do NOT consider *more* attractive than yourself. (Pick someone whose appearance you don't compare to your own.)

and

b) Who has both Facebook and Instagram accounts.

and

c) Who is at least 5 years older *or* younger than you

This person could be your mother, an aunt, a sister (as long as she is *at least 5* years older or younger than you), a cousin (as long as she is *at least 5* years older or younger than you), a grandmother, or any other female family member who fits a), b) & c).

Your Family Member's Initials: _____

Your Relationship with this Family Member: _____

Acquaintance Facebook Interaction

#1. Now we'd like you to log into your Facebook account on the lab computer. The Facebook home page is the only open tab on the lab computer. If you need help signing in, the Experimenter can help you, but, to respect your privacy, they will not look at your social media or be in the room while you interact with your Acquaintance on social media.

#2. Once you log in, please go directly to the profiles of the Acquaintance who you identified on the previous page.*

a) On Facebook, do this by searching her name in the top left "Search Facebook" box.

*Although your newsfeed will be displayed upon signing in, please don't scroll down it. Please *only* look at your Acquaintance's social media pages (not your own homepage or newsfeed, etc.).

#3. Once on your Acquaintance's Facebook profile, please try to find at least one full-length photo of her on Facebook, and *leave a comment online* on this photo.*

*If you cannot find a full-length photo of your Acquaintance, please try to find at least one photo featuring her, and *leave a comment online* on this photo.

You may view any other webpages that are a part of your Acquaintance's profile during the five-minutes we're asking you to now spend on Facebook. You may actively engage with her Facebook profile however you'd like (E.g., "like/react," comment, post, etc.) during the next **5 minutes**, as long as you comment on one photo featuring her (#3. above) and do NOT message her directly.

The Experimenter will leave the room & come give you further instructions after the 5 minutes are up.

Acquaintance Instagram Interaction

#1. Now we'd like you to log into your Instagram account on the lab computer. The Experimenter will open the home page on the lab computer for you. If you need help signing in, the Experimenter can help you, but, to respect your privacy, they will not look at your social media or be in the room while you interact with your Acquaintance on social media.

#2. Once you log in, please go directly to the Instagram profile of the Acquaintance who you identified on the previous page.*

a) On Instagram, do this by searching her name in the top middle "Search" box.

*Although your newsfeed will be displayed upon signing in, please don't scroll down it. Please *only* look at your Acquaintance's social media pages (not your own homepage or newsfeed, etc.).

#3. Once on your Acquaintance's Instagram profile, please try to find at least one full-length photo of her on Facebook, and *leave a comment online* on this photo.*

*If you cannot find a full-length photo of your Acquaintance, please try to find at least one photo featuring her, and *leave a comment online* on this photo.

You may view any other webpages that are a part of your Acquaintance's profile during the five-minutes we're asking you to now spend on Instagram. You may actively engage with her Instagram profile however you'd like (E.g., "like," comment, post, etc.) during the next **5 minutes**, as long as you comment on one photo featuring her (#3. above) and do NOT message her directly.

The Experimenter will leave the room & come give you further instructions after the 5 minutes are up.

Family Member Facebook Interaction

#1. Now we'd like you to log into your Facebook account on the lab computer. The Facebook home page is the only open tab on the lab computer. If you need help signing in, the Experimenter can help you, but, to respect your privacy, they will not look at your social media or be in the room while you interact with your Family Member on social media.

#2. Once you log in, please go directly to the profiles of the Family Member who you identified on the previous page.*

a) On Facebook, do this by searching her name in the top left "Search Facebook" box.

*Although your newsfeed will be displayed upon signing in, please don't scroll down it. Please *only* look at your Family Member's social media pages (not your own homepage or newsfeed, etc.).

#3. Once on your Family Member's Facebook profile, please try to find at least one full-length photo of her on Facebook, and *leave a comment online* on this photo.*

*If you cannot find a full-length photo of your Family Member, please try to find at least one photo featuring her, and *leave a comment online* on this photo.

You may view any other webpages that are a part of your Family Member's profile during the five-minutes we're asking you to now spend on Facebook. You may actively engage with her Facebook profile however you'd like (E.g., "like/react," comment, post, etc.) during the next **5 minutes**, as long as you comment on one photo featuring her (#3. above) and do NOT message her directly.

The Experimenter will leave the room & come give you further instructions after the 5 minutes are up.

Family Member Instagram Interaction

#1. Now we'd like you to log into your Instagram account on the lab computer. The Experimenter will open the home page on the lab computer for you. If you need help signing in, the Experimenter can help you, but, to respect your privacy, they will not look at your social media or be in the room while you interact with your Family Member on social media.

#2. Once you log in, please go directly to the Instagram profile of the Family Member who you identified on the previous page.*

a) On Instagram, do this by searching her name in the top middle "Search" box.

*Although your newsfeed will be displayed upon signing in, please don't scroll down it. Please *only* look at your Family Member's social media pages (not your own homepage or newsfeed, etc.).

#3. Once on your Family Member's Instagram profile, please try to find at least one full-length photo of her on Instagram, and *leave a comment online* on this photo.*

*If you cannot find a full-length photo of your Family Member, please try to find at least one photo featuring her, and *leave a comment online* on this photo.

You may view any other webpages that are a part of your Family Member's profile during the five-minutes we're asking you to now spend on Instagram. You may actively engage with her Instagram profile however you'd like (E.g., "like," comment, post, etc.) during the next **5 minutes**, as long as you comment on one photo featuring her (#3. above) and do NOT message her directly.

The Experimenter will leave the room & come give you further instructions after the 5 minutes are up.

Age of Contact

Regarding the person whose social media you viewed, to the best of your knowledge, how different in age is she than you? Please fill in the appropriate circle below:

- She's over 10 years younger than me
- She's about 10 years younger than me
- She's 5 - 9 years younger than me
- She's 1 – 4 years younger than me
- She's about my age
- She's 1 – 4 years older than me
- She's 5-9 years older than me
- She's about 10 years older than me
- She's over 10 years older than me

Social Media Interaction Questionnaire

1. a) Did you find a full-length photo of the person you identified earlier on Facebook? YES NO

b) Did you find a full-length photo of the person you identified earlier on Instagram? YES NO

2. a) ***If** you did not find a full-length photo of her on Facebook, did you find a photo featuring her? (*Otherwise leave this question blank.) YES NO

b) ***If** you did not find a full-length photo of her on Instagram, did you find a photo featuring her? (*Otherwise leave this question blank.) YES NO

3. In the space below, please provide a brief description of the photos you commented on:

4. In the space below, please write out the comments you left on the photos and why you wrote those particular comments (what about the picture made you write that?):

Facebook: _____

Instagram: _____

5. What else did you look at? _____

6. Did you “like/react” to or engage with her profiles in any other way? Why or why not? If so, what did this engagement entail?

On Facebook: _____

On Instagram: _____

7. How representative was the session just now of how you normally use Facebook?

(1) Not at all (2) Somewhat (3) Moderately (4) Very (5) Completely

8. How representative was the session just now of how you normally use Instagram?

(1) Not at all (2) Somewhat (3) Moderately (4) Very (5) Completely

Appendix R: Post-manipulation Body Dissatisfaction and Overall Appearance Dissatisfaction
Visual Analog Scales

VAS BD

Place a vertical line (or, “tick”) on the horizontal line below that shows how much dissatisfaction you feel about your body *at the present moment*.

None Very much

VAS OAD

Place a vertical line (or, “tick”) on the horizontal line below that shows how much dissatisfaction you feel about your overall appearance *at the present moment*.

None Very much

Appendix S: Body Image State Scale

BISS

For each of the items below, check the box beside the one statement that best describes how you feel **RIGHT NOW AT THIS VERY MOMENT**. Read the items carefully to be sure the statement you choose accurately and honestly describes how you feel right now.

1. Right now I feel . . .

- Extremely dissatisfied with my physical appearance
- Mostly dissatisfied with my physical appearance
- Moderately dissatisfied with my physical appearance
- Slightly dissatisfied with my physical appearance
- Neither dissatisfied nor satisfied with my physical appearance
- Slightly satisfied with my physical appearance
- Moderately satisfied with my physical appearance
- Mostly satisfied with my physical appearance
- Extremely satisfied with my physical appearance

2. Right now I feel . . .

- Extremely satisfied with my body size and shape
- Mostly satisfied with my body size and shape
- Moderately satisfied with my body size and shape
- Slightly satisfied with my body size and shape
- Neither dissatisfied nor satisfied with my body size and shape
- Slightly dissatisfied with my body size and shape
- Moderately dissatisfied with my body size and shape
- Mostly dissatisfied with my body size and shape
- Extremely dissatisfied with my body size and shape

Appendix S: Body Image State Scale

3. Right now I feel . . .

- Extremely dissatisfied with my weight
- Mostly dissatisfied with my weight
- Moderately dissatisfied with my weight
- Slightly dissatisfied with my weight
- Neither dissatisfied nor satisfied with my weight
- Slightly satisfied with my weight
- Moderately satisfied with my weight
- Mostly satisfied with my weight
- Extremely satisfied with my weight

4. Right now I feel . . .

- Extremely physically attractive
- Very physically attractive
- Moderately physically attractive
- Slightly physically attractive
- Neither attractive nor unattractive
- Slightly physically unattractive
- Moderately physically unattractive
- Very physically unattractive
- Extremely physically unattractive

5. Right now I feel . . .

- A great deal worse about my looks than I usually feel
- Much worse about my looks than I usually feel
- Somewhat worse about my looks than I usually feel
- Just slightly worse about my looks than I usually feel
- About the same about my looks as usual
- Just slightly better about my looks than I usually feel
- Somewhat better about my looks than I usually feel
- Much better about my looks than I usually feel
- A great deal better about my looks than I usually feel

Appendix S: Body Image State Scale

6. Right now I feel that I look . . .
- A great deal better than the average person looks
 - Much better than the average person looks
 - Somewhat better than the average person looks
 - Just slightly better than the average person looks
 - About the same as the average person looks
 - Just slightly worse than the average person looks
 - Somewhat worse than the average person looks
 - Much worse than the average person looks
 - A great deal worse than the average person looks

Appendix T: State Self-Esteem Scale

SES

This is a questionnaire designed to measure what you are thinking at this moment. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself **at this moment**. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you **RIGHT NOW**.

1 = Not at All

2 = A Little Bit

3 = Somewhat

4 = Very Much

5 = Extremely

- | | | | | | |
|--|---|---|---|---|---|
| 1. I feel confident about my abilities. | 1 | 2 | 3 | 4 | 5 |
| 2. I am worried about whether I am regarded as a success or failure. | 1 | 2 | 3 | 4 | 5 |
| 3. I feel satisfied with the way my body looks right now. | 1 | 2 | 3 | 4 | 5 |
| 4. I feel frustrated or rattled about my performance. | 1 | 2 | 3 | 4 | 5 |
| 5. I feel that I am having trouble understanding things that I read. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel that others respect and admire me. | 1 | 2 | 3 | 4 | 5 |
| 7. I am dissatisfied with my weight. | 1 | 2 | 3 | 4 | 5 |
| 8. I feel self-conscious. | 1 | 2 | 3 | 4 | 5 |
| 9. I feel as smart as others. | 1 | 2 | 3 | 4 | 5 |
| 10. I feel displeased with myself. | 1 | 2 | 3 | 4 | 5 |
| 11. I feel good about myself. | 1 | 2 | 3 | 4 | 5 |
| 12. I am pleased with my appearance right now. | 1 | 2 | 3 | 4 | 5 |
| 13. I am worried about what other people think of me. | 1 | 2 | 3 | 4 | 5 |
| 14. I feel confident that I understand things. | 1 | 2 | 3 | 4 | 5 |

Appendix T: State Self-Esteem Scale

- | | | | | | |
|---|---|---|---|---|---|
| 15. I feel inferior to others at this moment. | 1 | 2 | 3 | 4 | 5 |
| 16. I feel unattractive. | 1 | 2 | 3 | 4 | 5 |
| 17. I feel concerned about the impression I am making. | 1 | 2 | 3 | 4 | 5 |
| 18. I feel that I have less scholastic ability right now than others. | 1 | 2 | 3 | 4 | 5 |
| 19. I feel like I'm not doing well. | 1 | 2 | 3 | 4 | 5 |
| 20. I am worried about looking foolish. | 1 | 2 | 3 | 4 | 5 |

Appendix U: Body Esteem Scale

BES

On this page are listed a number of body parts and functions. Please read each item and indicate how you feel about this part or function of your own body using the following scale:

- 1 = Have strong negative feelings
- 2 = Have moderate negative feelings
- 3 = Have no feelings one way or the other
- 4 = Have moderate positive feelings
- 5 = Have strong positive feelings

- 1. body scent _____
- 2. appetite _____
- 3. nose _____
- 4. physical stamina _____
- 5. reflexes _____
- 6. lips _____
- 7. muscular strength _____
- 8. waist _____
- 9. energy level _____
- 10. thighs _____
- 11. ears _____
- 12. biceps _____
- 13. chin _____
- 14. body build _____
- 15. physical coordination _____
- 16. buttocks _____
- 17. agility _____
- 18. width of shoulders _____

Appendix U: Body Esteem Scale

19. arms _____
20. chest or breasts _____
21. appearance of eyes _____
22. cheeks/cheekbones _____
23. hips _____
24. legs _____
25. figure or physique _____
26. sex drive _____
27. feet _____
28. sex organs _____
29. appearance of stomach _____
30. health _____
31. sex activities _____
32. body hair _____
33. physical condition _____
34. face _____
35. weight _____

Appendix V: Drive for Thinness

DFT

This is a scale which measures a variety of attitudes, feelings, and behaviours. Some of the items relate to food and eating. Others ask you about your feelings about yourself. **THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL.** Read each question and fill in the circle under the column

which applies best to you. Please answer each question *very* carefully. Thank you.

	ALWAYS	USUALLY	OFTEN	SOMETIMES	RARELY
I eat sweets and carbohydrates without feeling nervous	•	•	•	•	•
I think about dieting	•	•	•	•	•
I feel extremely guilty after overeating	•	•	•	•	•
I am terrified of gaining weight	•	•	•	•	•
I exaggerate or magnify the importance of weight	•	•	•	•	•
I am preoccupied with the desire to be thinner	•	•	•	•	•
If I gain a pound, I worry that I will keep gaining	•	•	•	•	•

Appendix W: Height, Weight, and Suspicion Probe Record Form

URPP Participant Code: _____

Weight: _____ Height: _____

Your Thoughts

Sometimes in studies, people develop other ideas about what it is that we are studying or what we are trying to find out. It is important for us to know if people are doing this, so we like to ask participants about this. If you have any thoughts about what we are studying, please list them below. At what point in the study did each thought occur to you?



FEEDBACK AND DEBRIEFING

Thank you for participating in our study! Although we were interested in understanding different ways people use social media in different relationships, our research question was slightly more complicated than we first told you.

Recent correlational research has shown that social engagement on social media, such as the activity you were asked to do online in this study, but not mere exposure to one's Facebook account, is related to a drive for thinness — a central symptom of eating disorders — in young adults (Kim & Chock, 2015; Garner, Olmsted, & Polivy, 1983). Appearance comparison appears to moderate the correlational relationship between social-media social engagement and body image concerns, such as drive for thinness (Kim & Chock, 2015; Fardouly & Vartanian, 2016). Regarding their appearance, young women report frequently making “upward comparisons” to distant peers on Facebook (Fardouly & Vartanian, 2015). On the other hand, family members do not appear to be sources of upward appearance comparisons for female Facebook users (Fardouly & Vartanian, 2015). In this study, we wanted to see if there is a causal effect of social engagement on social media on increased body image concerns. We predicted that people who interacted with a distant peer on social media would feel worse off about their bodies than people who interacted with a family member on social media. We also predicted that people who don't generally tend to compare their appearance to others wouldn't be as affected by the social media social engagement as people who do tend to compare their appearance to others. Participants in the two experimental groups were either asked to engage with a family member's or peer's social media accounts. After the social medial social engagement exercise, people then completed the dependent measures, which included questions that assessed body image concerns.

At the beginning of the study, we could not inform you of the complete purpose of the study as it pertains to any aspect of social media social engagement to body image concerns, as this information might have created a response bias. If people knew in advance what we are trying to study, it could have weakened our results. We will be getting many other students just like yourself to participate in this study over the coming weeks, so it is very important that you do not discuss this study with other potential student participants. If you have any questions or concerns regarding your participation in this study, you may contact Jacqueline Hogue.

Appendix X: Feedback and Debriefing Information Sheet

If you have worries or concerns about body image, help, support, and information on eating disorders can be found at The National Eating Disorder Information Centre. Counselling services for a wide range of issues students may be experiencing (e.g., interpersonal/relationship difficulties, disordered eating/body image, etc.) are also available through the Personal Counselling Services.

Thank you for participating in this study!