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Selfies On Social Media: The Role Of Appearance Contingent Self-Worth And Impact On Self-Esteem

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SELFIES ON SOCIAL MEDIA: THE ROLE OF APPEARANCE CONTINGENT SELF-WORTH AND IMPACT ON SELF-ESTEEM

By

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ABSTRACT

In this dissertation, women's motivation to post *selfies*, defined as self-taken photographs of only themselves, and the impact of feedback received on these images on self-esteem was investigated. It was hypothesized that women higher in appearance contingent self-worth would have a stronger desire for positive appearance feedback, and that this would result in more frequent selfie posting, as this could be a means of soliciting positive feedback. In addition, it was hypothesized that women higher in appearance contingent self-worth would be more strongly impacted by feedback received on selfies than would women lower in appearance contingent self-worth given that this feedback could be perceived as being appearance-based.

Three studies were conducted online, all with female undergraduate students. In Study I ($N = 297$), survey-based data were collected, and the results indicated that although the correlation between appearance-contingent self-worth and frequency of selfie posting was not significant, there was a significant indirect relationship through the desire to obtain positive appearance feedback. Further, exploratory analyses revealed that appearance contingent self-worth was both directly and indirectly related to the extent to which women edit their photos.

In Study II ($N = 48$), women's Instagram accounts were accessed to obtain information about the average proportion of their followers who liked their selfies and provided positive appearance-based comments over two months. This information was used in conjunction with self-report measures to determine whether the amount of feedback received was associated with women's trait self-esteem and appearance satisfaction over that time period. However, due to difficulties with recruitment, all

analyses were underpowered and limited conclusions could be drawn about the relationships between selfie feedback on one hand and trait self-esteem and appearance satisfaction on the other.

Lastly, in Study III ($N = 175$), an experimental design was used to determine whether receiving more or less likes than expected on a posted selfie affected women's state appearance and social self-esteem and resulted in changes in women's global state self-esteem. The results indicated that receiving more or less likes than expected on a selfie affected changes in global self-esteem, such that women who received more likes than expected experienced increases in state global self-esteem. Appearance contingent self-worth was assessed as a moderator of these potential effects, but was not significant. However, appearance contingent self-worth affected the interpretation of women's number of received likes. Women higher in appearance contingent self-worth were more likely to attribute their number of received likes to their appearance than were women lower in appearance contingent self-worth.

Taken together, the findings of this research suggest that although women higher in appearance contingent self-worth may have a stronger desire for appearance feedback and therefore post selfies more frequently, selfie posting may not always be an appearance-driven act. Appearance contingent self-worth was not directly related to selfie posting, nor did it moderate the impact of received likes on self-esteem. Further, research on the uses and gratifications associated with posting selfies on social media indicates that posting selfies to show one's appearance and/or gain self-confidence is only one potential motivator underlying the posting of these photos (Alblooshi, 2015; Sung et al., 2016).

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CHAPTER 1

INTRODUCTION

The aim of this dissertation was to better understand what motivates women to post self-taken photographs of themselves on social media as well as the impact of receiving feedback on these images. Social media (e.g., Facebook, Twitter, Instagram), are Web 2.0 internet-based applications sustained by user-generated content (Obar & Wildman, 2015). They require users to create profiles that are maintained through specific platforms and facilitate the development of social networks by allowing users to interact with each other (Obar & Wildman, 2015). Adolescents and young adults access social media multiple times each day (Fardouly & Vartanian, 2015; Pempek, Yermolayeva, & Calvert, 2009; Porch, 2015) and the average person spends 60-120 minutes on social media per day (Kalpidou, Costin, & Morris, 2011) with some reporting spending more than two hours per day (Pempek et al., 2009; Santarossa & Woodruff 2017; Tsitsika et al., 2014). Social media platforms vary in their *technological affordances* which are the features that enable users to enact certain behaviours (Perloff, 2014b; Turner, 2014). For example, on Instagram, users are able to post and edit their own photographs, observe others' (e.g., friends and celebrities) photographs and *like* and comment on them. Liking on Instagram, specifically, involves clicking a small heart-shaped icon that appears under each post, and the number of *likes* each post receives is updated in real-time and displayed to the user as well as to their followers. Other forms of social media, such as Twitter and Facebook, also allow users to post, view, like/favourite, and comment on photographs, but the technological affordances relating to image editing prior to posting the photographs are not as extensive compared to Instagram at present.

However, these social media platforms have additional technological affordances, such as the ability to share articles posted by other users.

Correlates of Social Media Use

Numerous researchers have investigated correlates of overall social media use, and have assessed how the frequency, duration, or intensity of social media use relate to variables such as depressive symptoms, appearance-related variables, narcissism, self-esteem, and social capital, which is the personal value obtained from social networks and the reciprocity that ensues. More time spent on Instagram and more total time spent on social media across platforms has been found to be associated with greater depressive symptoms for American men and women (Lup, Trub, & Rosenthal, 2015) and Serbian boys and girls (Pantic et al., 2012), respectively. Additionally, intensity of Facebook use has been associated with greater bonding (Ellison et al., 2007) and bridging (Steinfield, Ellison, & Lampe, 2008) social capital among male and female university students in both the United States (US) and South Korea (Lee, Kim, & Ahn, 2014). Bridging social capital refers to the benefits and reciprocity associated with weak connections, such as being part of a school community and donating to it, whereas bonding social capital refers to the benefits and reciprocity associated with closer relationships, such as social support received from and given to friends and family (Lee et al., 2014; Putnam, 2000).

With respect to appearance-related variables, internalization of the thin-ideal has been shown to correlate positively with both frequency and duration of Facebook and MySpace use among female high school (Tiggemann & Slater, 2013) and university students (Fardouly & Vartanian, 2015) in Australia, but not among middle and high school students in the US (Meier & Gray, 2013). Research reports from the Netherlands

indicate that more frequent use of Dutch social networking sites (i.e., Hyves.nl or CU2) was associated with greater appearance investment (de Vries, Peter, Nikken & de Graaf, 2014) and body dissatisfaction (de Vries, Peter, Nikken, & de Graaf, 2016) among both male and female adolescents. Similarly, Fardouly and Vartanian (2015) found that more frequent use of Facebook was associated with greater body dissatisfaction among female undergraduate students in Australia. In contrast, Valkenburg, Peter, and Schouten (2006) did not find a significant relation between CU2 use and appearance satisfaction.

The results pertaining to narcissism and self-esteem are similarly mixed. Whereas greater use of social media has been found to relate to higher self-reported narcissism among male and female undergraduate students in Canada (Medizadeh, 2010), and men (Fox & Rooney, 2015) and women (Weiser, 2015) in the US, Skues, Williams, and Wise (2012) did not find a significant relation between Facebook use and narcissism among male and female undergraduates in Australia. With respect to self-esteem, greater frequency and duration of Facebook use among men and women in North America has been associated with lower self-esteem (Kalpidou, et al., 2011; Mehdizadeh, 2010; Vogel, Rose, Roberts, & Eckles, 2014; Zuo, 2014). However, Skues et al. (2012) reported no significant relation between self-esteem and time spent on Facebook in their sample of male and female undergraduates in Australia. In another study conducted among male and female undergraduates in Australia, self-esteem did not predict time spent on social media (Wilson, Fornasier, & White, 2010). However, in the Wilson et al. (2010) study, self-esteem was entered into a regression model which also included the big five personality variables, such as agreeableness and extraversion, as predictors. Thus, some of the variance that may have been accounted for by self-esteem if it was entered on its

own, may have been absorbed by these other variables.

The Actions in which People Engage on Social Media

The correlational studies that have focused on overall time spent on social media do not provide information regarding specific actions in which individuals engage while on social media, or the personal impact of such actions on users. Specific actions on social media may impact users in different ways, which may help explain some of the inconsistencies in the findings described above. For example, there is research suggesting that engaging with one's personal profile, rather than others' profiles, can enhance self-esteem. Facebook profiles contain self-generated information such as photographs, events attended, and status updates and serve as a means of self-presentation. Given that most people try to present themselves in a positive manner, Facebook profiles typically contain positive content about the self that could be perceived as affirming (Toma, 2013). The results of an experimental study conducted among mostly female undergraduate students (N = 98, 68% female) showed that reviewing one's own Facebook profile was as effective in minimizing defensiveness following a threat as writing about personal values, an established self-affirmation task (Toma & Hancock, 2013). In another study, Toma (2013, N = 159) required undergraduate participants to view either their own Facebook profile or view the profile of another undergraduate student, whom they did not know, for five minutes. Participants who viewed their own profile demonstrated significantly greater implicit state self-esteem on an Implicit Association Task (IAT), than those who viewed a stranger's profile. Similarly, Gentile, Twenge, Freeman, and Campbell (2012, N = 72) showed that undergraduate students who edited their own Facebook profiles for 15 minutes reported greater self-esteem afterwards than did people who were assigned to go

on Google Maps for the same amount of time.

Although engaging with one's profile may lead to some positive outcomes, social comparison is one potential action that has been associated with negative effects (e.g., Fardouly & Vartanian, 2015; Lup et al., 2015; Vogel et al., 2014). For example, Fardouly and Vartanian (2015, $N = 227$) found that the relation between frequency and duration of Facebook use and body image concerns was mediated by engagement in appearance-related comparisons while on Facebook. In another study, Vogel et al. (2014, $N = 145$) found that the relation between frequency of Facebook use and self-esteem was mediated by engagement in upward social comparisons, the act of comparing oneself to others who are perceived as superior. These findings suggest that looking at information shared by other users on social media, such as photographs and status updates, may have negative outcomes as a result of engaging in social comparisons. Thus, it appears that the outcome of engaging with social media depends on the specific activities in which users engage.

Photo-related behaviour on social media. Given that various actions on social media can differentially impact users, there has been a trend towards investigating more specific facets of social media use, especially photograph-posting, as it is one of the most common (Mabe, Forney, & Kelly, 2014) and preferred activities in which people engage on social media (Lee, Kim, & Ahn, 2014; Ryan & Xenos, 2011; Santarossa, 2015). It is also one of the top reasons people choose to use these sites/applications (Pempek et al., 2009), and a study conducted with over 350,000 Instagram users found that people typically post one image per week on Instagram (Hu, Manikonda, & Kambhampati, 2014).

A number of researchers have investigated gender differences in image-posting on social media. For example, numerous researchers have reported that women post more photographs on social media than men whether this behavior is assessed through self-report (Pempek et al., 2009; Rui & Stefanone, 2013; Sorokowski, Sorokowska, Frackowiak, Karwowski, Rusicka, & Oleszkiewicz, 2016) or observational methods (Mendelson & Papacharissi, 2010). Women's Facebook profiles have also been found to contain more photographs of themselves than is characteristic of men's profiles, and girls' and women's photographs tend to receive more comments (Mendelson & Papacharissi, 2010) and appearance-related feedback (deVries et al., 2016). In turn, women also spend more time than do men commenting on, and reading comments on, their own photographs and the photographs of others (McAndrew & Jeong, 2012), and they are also more likely than men to post profile images in which they look good (Siibak, 2009). Thus, although there are many different reasons for choosing a particular photograph for one's profile (e.g., photographs that document a special occasion, photographs that include friends), women tend to base their decisions on self-perceived physical appearance in the image. Overall, it appears that women tend to post and engage with photographs on social media to a greater extent than men do.

A wide range of images are posted on social media. Hu, Manikonda, and Kambhamtai (2014, $N = 50$) identified eight categories that can be used to classify social media images: photographs with friends, photographs of food, photographs of gadgets (e.g., a new phone), captioned images (i.e., images with embedded text), photographs of pets, photographs depicting an activity or landmark (e.g., a photograph taken at a basketball game), self-taken photographs of the self, and fashion images (e.g., images of

clothes or make up). In coding 200 photographs posted on Instagram by 50 different users, Hu et al. (2014) found that almost 50% were either of the user or of the user with his/her friends. Cluster analysis revealed five main types of image-posters: (1) people who mainly post text-embedded images such as quotes, mottos, and memes, which are images with text overlain that are meant to be humorous, (2) people who mainly post photographs of food, (3) people who mainly post photographs of the activities in which they engage, (4) people whose posts are primarily composed of self-taken photographs of themselves and photographs of themselves with their friends, with approximately an equal number of both, and (5) people who almost exclusively post self-taken photographs of themselves, also called selfies. Selfies in particular have garnered a lot of attention within the non-scientific community, with numerous news articles making suppositions about the psychological functioning of people who post selfies, and the consequences of posting selfies more generally (Senft & Baym, 2015).

Selfies

The term *selfie* was declared Word of the Year by the Oxford dictionary in 2013 where it is defined as "a photograph that one has taken of oneself, typically one taken with a smartphone or webcam and shared via social media." The Merriam-Webster Dictionary defines a selfie as "an image of oneself taken by oneself using a digital camera especially for posting on social networks" (Merriam-Webster, 2016). Both definitions identify two components that are characteristic of a selfie: (1) that it is a self-taken photograph of the self and (2) that the photograph is usually posted/shared on social media. Not surprisingly, selfies have been most commonly researched in relation to their postings on social media. Definitions of the term selfie do not typically specify that only

the photographer can be in the picture. However, McLean, Paxton, Wertheim, and Masters (2015) differentiate selfies from *usies,* and define selfies as self-taken photographs in which only the photographer appears whereas usies can include others and refer to "us" (e.g., the photographer and friends). Similarly, Dhir, Pallesen, Torsheim, and Andreassen (2016) distinguish between "individual selfies" and "group selfies" (p. 551). Within this research, the term selfie refers only to self-taken photographs of the self that do not include other people.

People typically take selfies using a webcam, by holding a smartphone with one hand or an external appendage (e.g., a selfie-stick) with the camera pointed at themselves, or by holding a smartphone with the camera pointing towards a mirror to photograph their own reflection. Although selfies can be full body photographs, particularly if a mirror or selfie-stick is utilized, the photographer's face is typically the focus of selfies (Porch, 2015). Not surprisingly, the majority of women rate their face, hair, and eyes as "extremely important" for selfies, whereas few women rate arms or upper or lower torso as important (Porch, 2015, p. 46). Several photographs are often taken in the attempt to find a selfie deemed worthy of posting (e.g., Porch, 2015). Alblooshi (2015) found that men and women reported taking an average of seven and eight selfies per week, respectively, but posting only an average of 1.4 per week. Similarly, Re, Wang, He, & Rule (2016) reported that self-identified regular selfie posters in their sample of Canadian undergraduates took an average of 4.9 selfies per week, and posted an average of 1.39 selfies on social media.

There are a wide range of views on selfies. Paris and Pietschnig (2015) asked 20 students to report their attitudes about taking selfies. Some indicated a dislike for selfies

with statements such as: “taking selfies is not cool”, “only people seeking attention take selfies”, “people take too many selfies”, whereas others noted some positive aspects of selfies such as: “selfies are good for capturing memorable experiences” and “taking selfies can make a person more confident.” Consistent with the latter, female college students who participated in a qualitative study reported that selfies allow women to have a sense of agency in how they are represented and can help to boost their self-confidence and self-appreciation (Porch, 2015).

With respect to who posts selfies, there are mixed findings. Younger adults tend to post more selfies than older adults (e.g., Dhir et al., 2016; Weiser, 2015) as do people with more followers (Barry et al., 2015). Sorokowski et al. (2016) found that women post more selfies than do men on social media, but Alblooshi (2015) did not find any significant differences in the number of selfies posted by men and women. Posting selfies on social media was found to be associated with greater body satisfaction in one study (Ridgway & Clatyon, 2016), but McLean et al. (2015) found that regular selfie-posters reported significantly higher body dissatisfaction and internalization of the thin ideal than non-selfie-posters. In terms of narcissism, Barry et al. (201) did not find a significant correlation between narcissistic tendencies and the number of selfies posted, although positive correlations between selfie posting and narcissism were reported in studies by Fox and Rooney (2015), Sung, Lee, Kim, and Choi (2016), and Weiser (2015). Weiser (2015) posits that individuals with greater narcissistic tendencies post more selfies to gain the admiration of others and maintain self-esteem. Although, Alblooshi (2015) found that selfie posting was associated with greater self-esteem, Barry (2015) found no significant relationship between these two variables. Notably, when considering why people take

selfies, Alblooshi (2015) found that people who report taking selfies to increase their self-confidence actually have lower self-esteem than those who report posting selfies for other reasons.

Despite the large body of research pertaining to social media use and the fact that the selfie phenomenon has been ongoing for over a decade, research pertaining to selfies is quite limited and recent within the field of psychology. In April 2016, a search on PsycInfo (a database for publications within psychology) revealed only 10 peer reviewed articles that contained the term selfie, nine of which were written in English. Many selfie-related publications exist in other fields, such as the communication and media literatures, but studies within those disciplines are limited with respect to psychological variables. Thus, a goal of this research was to employ both media- and psychology-based theories as frameworks to assess: (1) what motivates women to post selfies on social media and (2) how feedback on their posted selfies affects female users. Specifically, this research draws on (a) Perloff's (2014a) Transactional Model of Social Media and Body Image Concerns (Perloff, 2014a); (b) two theories of self-esteem – Leary et al.'s Sociometer theory (Leary, 2001; Leary, 2005; Leary & Baumeister, 2000; Leary & Downs, 1995; Leary, Tambor, Terdal & Downs, 1995) and Crocker and Wolfe's (2001) Contingencies of Self Worth theory; and (c) Uses and Gratification theory (U&G; Katz, Blumer, & Gurevitch, 1974; Ruggiero, 2000).

Below, research related to social media feedback is reviewed and each of the theories mentioned above is described in relation to the three studies that comprise this dissertation.

Social Media Feedback

Typically, people receive feedback on the content they post on social media via likes and comments. Likes do not have a precise meaning. Thus, researchers have investigated what prompts people to like others' posts, which may consist of status updates, images, or links to news articles or videos and conversely, how people interpret the likes they receive on their own posts. Gao (2016) conducted 40 interviews with men and women in Europe and China to ascertain users' reasons for "liking" other people's posts. Participants were allowed to provide multiple reasons. More than 75% of the participants indicated that they liked another person's posts because they literally liked the content of the post. However, 50% of participants reported sometimes liking posts on social media, regardless of the content, to "support the poster" (p. 26). For example, one participant indicated that he liked everything his girlfriend posted, regardless of the content. Another motive for liking someone's post, identified by 20% of the sample, was to show that one "thinks or cares about" the person who posted (p. 26). Thus, in addition to demonstrating a true liking for the posted content, likes also may be indicative of relational value or social support.

With respect to how people perceive likes, Scissors, Burke, and Wengrovitz (2016) conducted a study with over 1500 Facebook users in which participants were asked why they think people like their posts generally, regardless of the content or type of post. Participants indicated that they interpreted likes from others as signs of agreement with the post content, attention, supportiveness, and/or empathy. There is also research on people's interpretation of likes received on selfies, specifically. In their qualitative study conducted among 24 female Instagram users aged 12-16 years in Asia, Chua and Chang

(2016) found that all of the participants felt that the likes they received on the selfies they posted on Instagram indicated that their followers liked their physical appearance. Consistent with this finding, women in Porch's (2015) study indicated that positive feedback on selfies (either in the form of likes or comments) helped them to feel more attractive. Overall, likes seem to be quite important to users of social media. For example, slightly over 50% of Facebook users reported that receiving "enough" likes on the content they post was somewhat important (Scissors et al., 2016). Moreover, female adolescents often pay attention to the number of likes they receive on the selfies they post (Chua & Chang, 2016) and people use various strategies, such as hashtags, to increase the number of likes they receive (Woodruff, Santarossa, & Lacasse, 2018).

Another means of obtaining feedback on a selfie posted on social media is through comments. Overall, positive comments on one's online profile, regardless of what people are commenting on, have been associated with more positive feelings about one's appearance, friends, and close relationships among adolescents (Valkenburg et al., 2006). To date, research has not focused specifically on positive appearance-related feedback in response to photographs posted on social media. However, there is non-social media-related research on appearance-related feedback. For example, Herbozo and Thompson (2006, $N = 246$) found a positive relationship between receiving positive appearance-related feedback in one's day to day life and self-esteem among young women. Additionally, those who received more positive appearance-related feedback from others also reported lower body dissatisfaction (Herbozo & Thompson, 2006). However, Calogero, Herbozo, and Thompson (2009) argue that there is *complimentary weightism.* That is, they posit that although appearance compliments can seem harmless,

such comments may actually result in greater self-objectification and body surveillance and, therefore, negatively impact women's body image. In support of this, Calogero et al. (2009, $N = 220$) found that the more positively women felt about the appearance-compliments they received, the greater their level of body dissatisfaction. Moreover, this relationship was mediated by body surveillance. However, given the cross-sectional design employed by Calogero et al. (2009), a causal relationship cannot be assumed. It is possible that women who are more body dissatisfied are more likely to feel better upon receipt of appearance-related compliments, and that positive appearance-related feedback does not result in the negative outcomes they suggest.

Regardless of whether feedback is received in the form of likes or comments, it appears that the absence or lack of feedback can negatively impact users of social media. For example, in the Scissors et al. (2016) study, 16% of their 1500 Facebook users reported feeling bad when something they posted did not receive "enough" likes (p. 1505). Moreover, in Porch's (2015) study, which focused specifically on feedback about selfies, the majority of participants indicated that they felt badly when they did not receive likes or comments on the photographs they posted. Under those circumstances, they began to wonder if the photograph contained flaws that they had not noticed. One participant stated: "If nobody likes it, I have negative feelings. I feel essentially like I didn't get any approval on how I look, so I must look bad because nobody liked it." (p. 54). Individuals vary in the extent to which feedback or a lack of feedback in response to posts on social media impacts their self-perceptions. Not surprisingly, researchers are now turning their attention to identifying how individual factors affect responses to feedback received on social media posts. For example, Scissors et al. (2016) found that

the importance of receiving likes was negatively correlated with self-esteem.

Review of Relevant Theories

Uses and Gratification (U&G) Theory. The U&G theory was initially applied to traditional mass media (Katz et al., 1974), the audio, visual, or print distribution systems such as television, magazines and radio that aimed to reach large audiences (Israel & Nagano, 1997). This theory posits that people are active, rather than passive, users of media and that they actively select the media they use based on *uses* and *gratifications* (Katz et al., 1974; Ruggiero, 2000). Uses and gratifications refer to motivations for media use and the associated satisfaction people obtain or hope to obtain from such use (Joinson, 2008; Ruggiero, 2000). The distinction between *sought-gratifications* and *obtained-gratifications* is of note as discrepancies between the two may impact future media use (Palmgreen & Rayburn, 1979; Palmgreen, Wennner, & Rayburn, 1974). Palmgreen and Rayburn (1979) found that media use is dependent on the average discrepancy between sought and obtained gratifications and that smaller discrepancies are associated with greater use of a particular media.

The idea that people take an active role in the selection and use of media is highly applicable to social media, given the wide range of available content and the possibility of being both a consumer and a creator of media using social media platforms (Perloff, 2014a; Ruggiero, 2000). Thus, numerous studies have been conducted with the goal of understanding the specific uses and gratifications associated social media use (e.g., Barker, 2009; Dunne, Lawlor, & Rowley, 2010; Joinson, 2008; Park, Kee, & Valenzuela, 2009; Quan-Haase & Young, 2010; Urista, Dong, & Day, 2009; Whiting & Williams, 2013).

Whiting and Williams (2013) conducted interviews with 25 participants aged 18-50 years to assess their reasons for general social media use. Ten main motivations emerged: social interaction, information seeking, information sharing, entertainment, relaxation, expression of opinions, surveillance/knowledge about others, passing time, communicatory utility, and convenience utility. Communicatory utility refers to using social media to find something to talk about with others, and convenience utility relates to the fact that social media is an accessible and efficient means of communicating with multiple people at once.

Other researchers have investigated the uses and gratifications associated with specific social media platforms. For example, in a study of uses and gratifications associated with Facebook, Joinson (2008) asked men (n = 53) and women (n = 88) to respond to the following question online: "What is the first thing that comes to mind when you think about what you enjoy most when using Facebook?" (p. 1029). Based on participant responses, 46 items were identified and these were subsequently administered to another, largely female, sample of students (N = 241). Participants rated the importance of each of the 46 items, and the data was subjected to factor analysis. Seven factors (uses and/or gratifications) were identified: sharing/posting photographs; posting and viewing status updates; content, which refers to using applications or games within Facebook; social connection; shared identities; social investigation; and social network surfing. Social connection refers to connecting with friends, such as those who live out of town. Shared identities refers to communicating with likeminded people and being able to join groups. Social investigation refers to the act of observing what others are posting and what they are up to, colloquially referred to as "creeping." Lastly, social network

surfing refers to viewing other people's friends.

The uses and gratifications associated with Instagram, an image-based social media platform, have also been investigated. Sheldon and Bryant (2016) identified various motivations for Instagram use including surveillance/knowledge of others; documentation (e.g., of special events); coolness, which refers to the use of Instagram to increase popularity; and displaying one's photography skills. Hene (2015) identified additional motivations for Instagram use including keeping up with trends, connecting with friends and family, and sharing aspects of one's life. Other researchers have also investigated reasons for using social media, but have asked participants to rate pre-determined uses and gratifications similar to those mentioned previously (e.g., Barker, 2009; Raacke & Bonds-Raacke, 2008).

Specific uses and gratifications associated with taking and posting selfies on social media also have been assessed (e.g., Alblooshi, 2015; Sung, Lee, Kim, & Choi, 2016). In their sample of Korean male (n = 94) and female (n = 221) undergraduate students, Sung et al. (2016), identified four main motivations for posting selfies: attention seeking, archiving, communicating, and entertainment. Attention seeking involved obtaining attention and acknowledgement from others as well as gaining self-confidence from the reactions of others. Archiving, was similar to the aforementioned use, documentation, and involved posting selfies to record special moments. Communication and entertainment referred to posting selfies as a means of keeping in touch with others and to pass time, respectively. Alblooshi (2015) reported that male (n = 175) and female (n = 190) undergraduate students in the United States endorsed a variety of reasons for taking or posting selfies. These included feeling better upon the receipt of likes or

positive comments, entertainment, others also doing so, boosting self-confidence, showing off physical appearance or style, and to pass time. Some of the motivations for taking and posting selfies on social media clearly overlap with the uses and gratifications associated with using other social media. However, self-confidence and feedback from others appear to emerge more overtly in response to taking and posting selfies.

Transactional model of social media and body image concerns. The Transactional Model of Social Media and Body Image Concerns (Perloff, 2014a) pertains to social media use as a whole. However, many of the narrative examples used by the author to explain the model utilize image-related activity on social media, making this theoretical framework applicable to the study of selfies. The first part of the model was of primary interest in the present research and draws from the Uses and Gratification theory. It states that individual factors such as high perfectionism, low self-esteem, thin-ideal internalization, and the importance of appearance for self-worth lead women to use social media, particularly appearance-focused content, to seek gratification through "reassurance and validation [of their] physical and social attractiveness" (Perloff, 2014a, p. 369). Thus, women who possess particular traits may be more motivated to take and post selfies on social media in order to obtain affirmation of their physical and "social attractiveness." Perloff (2014a) did not elaborate on what is meant by "social attractiveness," hence the use of quotations around this term.

The second part of Perloff's model indicates that obtaining gratifications in the form of reassurance about their physical and social attractiveness will lead women to spend more time on social media and, thereby, begin to engage in *mediating processes* such as social comparison, narrative-induced transportation, identification, and online

normative influences. Social comparisons occur when people compare aspects of themselves to the same aspects in others. Within Perloff's (2014a) transactional model, women are thought to engage in specific appearance-based social comparisons while using social media. Narrative induced transportation is a process in which people become immersed in a particular narrative and as a result become open to the message or perspective described in it (Green, Brock & Kaufman, 2004). Perloff (2014a) considers pro-eating disorder websites and thinspiration blogs to be narratives in which people may immerse themselves. Identification occurs when people identify in some way with particular characteristics of posts on social media, either with the content or the individual who posted the material. Narrative induced transportation may interact with identification, such that individuals who identify with some aspect of a narrative may be more likely to adopt its message. Lastly, online normative influences refer to the process by which women learn prescriptive norms based on the material viewed on social media. Although some of these processes may provide gratification, they may also result in "social media effects", such as body dissatisfaction and negative affect Perloff, 2014a, p. 368). That is, "once [women] are on social media, they will encounter a host of actual and perceived pressures that may aggravate body disturbances" (Perloff, 2014a, p. 369). Social media effects, such as body dissatisfaction and negative affect, are posited to form a positive feedback loop, such that they promote the desire to continue seeking gratification through social media. Additionally, the model posits that negative media effects may result in disordered eating behaviors over time (See Figure 1).

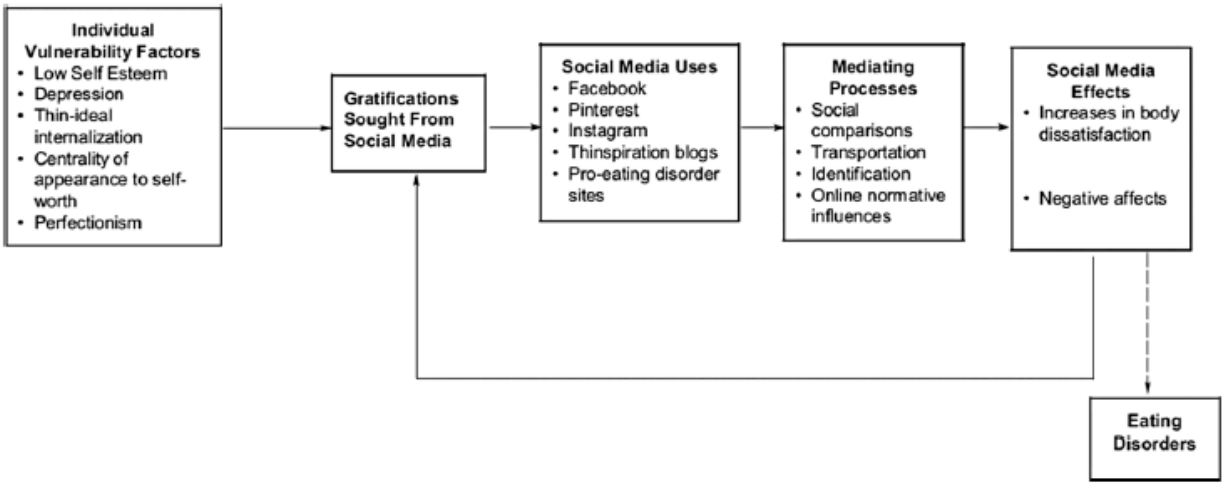

Figure 1. The Transaction model of social media and body image concerns (Perloff, 2014a, p. 368)

The Transactional Model of Social Media and Body Image Concerns is "largely unsubstantiated" (Turner, 2014, p. 397) and has been the focus of some criticism. For example, Turner (2014) notes that Perloff (2014a) included different forms of social media (e.g., pro-ana websites, Facebook, and Instagram), but discussed them as if they all operate in the same manner. That is, there was no consideration of the specific technological affordances associated with each form of social media. Additionally, the model, particularly the second part of it, focuses on negative outcomes (Turner, 2014) despite the fact that there is research to suggest that social media use may be associated with positive outcomes such as a sense of belonging (e.g., Lee et al., 2014) and increases in self-esteem (e.g., Toma, 2013). Thus, further research on this model is required.

Self-esteem. Self-esteem is the evaluative component of self-concept, which is defined as the summation of all the knowledge and beliefs individuals have about themselves (Heatherton & Wyland, 2003). More specifically, self-esteem is considered to be a reflection of the individual's overall sense of self-worth based on perceptions of

personal characteristics (Baumeister, 1998; Coopersmith, 1967; Heatherton & Wyland, 2003; MacDonald, Saltzman, & Leary, 2003). People are thought to be motivated to maintain their self-esteem, and to behave in ways that engender positive feelings about themselves (Leary, 2005). Self-esteem can be considered at both the *trait* and *state* levels. Trait self-esteem refers to an individual's overall level of self-esteem and is considered to be fairly stable, whereas state self-esteem refers to an individual's self-esteem at a particular moment and can vary depending on the situation (Crocker & Wolfe, 2001).

Sociometer theory. Sociometer Theory conceptualizes self-esteem in terms of *relational value* which is "the degree to which a person regards his or her relationship with another individual as valuable, important, or close" (Leary, 2001, p. 6). More specifically, Sociometer Theory posits that self-esteem is part of a human adaptation – the *sociometer*, that has evolved to facilitate survival by allowing people to monitor their relational value to others (Leary, 2005; Leary & Baumeister, 2000). Thus, having high self-esteem is a signal to the self that one is valuable to others, meaning that people are more likely to accept, include, and help him/her. Conversely, Sociometer Theory posits that people will experience decreases in state self-esteem when they have experiences that indicate they are of low relational value to others (e.g., rejection). Thus, according to this theory, people are motivated to enhance or maintain their self-esteem, not simply because it makes them feels good about themselves, but rather, because it signifies an increased likelihood of social inclusion and minimizes the likelihood that they will be excluded. Being able to detect the probability of social inclusion or rejection would have been particularly adaptive in early human evolution given the importance of cooperative group living for survival (Baumeister & Leary, 1995).

In support of this theory, Leary et al. (1995) found that people's feelings about themselves in response to hypothetical engagement in various behaviours were related to the extent to which they believed that such behaviours would result in acceptance from others. More specifically, male (n = 75) and female (n = 75) undergraduate students rated 16 behaviours in terms of how they felt others would react to them if they engaged in such behaviors from 1 (*many other people would reject or avoid me*) to 5 (*many other people would accept or include me*). After completing some filler measures, participants were then given the same 16 items in a different order and asked to rate how they would feel about themselves if they engaged in each behavior on a seven-point scale. Half of the participants rated the reactions of others first and the other half rated themselves first. The canonical correlations between ratings on the two lists of items were high, and the overall ranking of the two lists were fairly similar, indicating that they were highly related.

In addition, the results of experimental studies indicate that people experience greater positive state self-esteem following signals of high relational value (e.g., social inclusion) and decreases in state self-esteem following signals of poor relational value (e.g., rejection; Buckley, Winkel, & Leary, 2004; Leary, Cottrell, & Phillips, 2001; Leary et al., 1995). For example, Leary et al. (1995) conducted a second study with a different sample of male (n = 80) and female (n = 80) undergraduate students. Participants came into the lab in groups of five and were either assigned to work in a group of three participants or to be one of the two people who had to work independently. Participants were either told that these assignments were based on the preferences of the other individuals present, or that they were completely random, depending on the condition to

which they were assigned. Participants who were assigned to work on their own and told that this was due to the preferences of other participants, reported lower state self-esteem following this social rejection as compared to those who were told that the decision was completely random (Leary et al., 1995). In another study, Buckley et al. (2004) had 188 undergraduate students complete a questionnaire about themselves. They were told that their responses would be shared with another participant who would then rate the extent to which they would be willing to work with them. People who received feedback that the person who had reviewed their questionnaire did not want to work with them reported significantly lower state self-esteem than those who were told that the other person would definitely want to work with them.

Contingencies of self-worth theory. Contingencies of Self-Worth theory (Crocker & Wolfe, 2001) is another major theory of self-esteem. This theory posits that peoples' self- esteem is dependent on various domains, or *contingencies*, such that their sense of worth is contingent upon their perceived successes or failures within domains of self-importance. Moreover, people differ in their contingencies of self-worth and can have more than one (Crocker & Wolfe, 2001). However, even if people obtain their sense of self-worth from more than one domain, the extent to which they draw on each domain will vary, and so there will likely be a predominant contingency of self-worth. Crocker and colleagues maintain that people generally put forth greater effort to obtain positive outcomes in contingent domains in order to enhance or maintain their self-esteem (Crocker, 2002b; Crocker & Wolfe, 2001). For example, people high in academic achievement-contingent self-worth are likely to invest more time in their studies than those who do not base their self-worth on academic success. Moreover, appearance

contingent self-worth has been found to predict body surveillance, which involves a preoccupation with how one looks, whereas other unrelated contingencies of self-worth (e.g., virtue and competition) do not (e.g., Overstreet & Quinn, 2012).

Contingencies of self-worth are thought to affect both trait and state self-esteem. That is, high trait self-esteem is considered to be the product of ongoing opportunities to satisfy contingencies of self-worth, and state self-esteem fluctuates depending on events or circumstances (Crocker, 2002b; Crocker & Wolfe, 2001). The impact of a particular event on state self-esteem depends on whether that event relates to a contingent domain. For example, losing a race would do more harm to the self-esteem of an individual whose self-worth is tied to success in competitive environments, than for someone who bases self-worth on loyalty to others.

Contingencies of self-worth are organized hierarchically, such that there are broad, superordinate contingencies and more specific domains within each of them. Crocker and colleagues have identified seven major contingencies of self-worth: Competencies, competition, approval from others, family support, appearance, God's love, and virtue (Crocker, Karpinski, Quinn, & Chase, 2003; Crocker & Wolfe, 2001). Clabaugh, Karpinski, and Griffin (2008) further proposed a more specific body-weight contingency of self-worth which would be subsumed under the appearance contingency. Another example of a subordinate contingency is academic achievement, which falls under the competencies domain. Academic achievement-contingent self-worth is often studied, rather than competency-based self-worth more generally, as the main measure of contingencies of self-worth, the Contingencies of Self-Worth Scale, focusses on

academic achievement specifically (Crocker, Luhtanen, Cooper, & Bourvrette, 2003b) and most research is conducted with college or university students.

Notably, some contingencies of self-worth are associated with more fragile self-esteem than others, depending on whether they are *internal* or *external* (Crocker, 2002a). Internal contingencies of self-worth, such as virtue, can be controlled intra-personally. Thus, people who base their self-worth in these domains are more easily able to maintain and enhance their self-esteem, relative to those with external contingencies. External contingencies of self-worth, such as other's approval and appearance, are clearly dependent on others. Thus, people with external contingencies of self-worth tend to have less stable self-esteem and it is more difficult for them to maintain and enhance their self-esteem given that they are not in full control of it (Crocker, 2002a). For example, a person high in appearance contingent self-worth may constantly engage in behaviors to maximize the likelihood of receiving appearance validation, such as a compliment on their appearance, to try to maintain self-worth (Crocker, 2002a). Crocker, Sommers, and Luhtanen (2002) found support for the Contingencies of Self-Worth theory in their study of 32 college students who had applied to graduate school. Participants were asked to report whenever they received feedback from a school to which they had applied for admission. Each time they did so, participants completed a state version of the Rosenberg Self-Esteem Scale. The extent to which self-esteem increased with receiving an acceptance or decreased when rejected by a school was moderated by the school competency-contingency of self-worth. Individuals who based their self-worth on their academic competency experienced greater increases and decreases in self-esteem in response to admission decisions. None of the other contingencies assessed in the study

moderated this relationship. Crocker et al. (2003a) reported additional support for the theory based on findings that the more students base their self-worth on academic success, the greater the decrease in self-esteem experienced when they received marks that were lower than expected.

Combining the Sociometer and Contingencies of Self-Worth theories. As mentioned previously, Contingencies of Self-Worth theory proposes that people derive their sense of self-worth from different domains, and the Sociometer theory states that self-esteem is an indicator of relational value. MacDonald et al. (2003), point out that "contingencies of self-worth are fundamentally contingencies of relational value" (p. 36). A primary hypothesis of this combined model is that people seek to enhance or maintain their self-esteem via contingencies that are perceived to be important for social inclusion and/or approval from others (MacDonald et al., 2003; O'Driscoll & Jarry, 2015).

MacDonald et al. (2003) conducted one of the first studies to assess whether contingencies of self-worth were actually related to relational value. They had 90 male and 90 female undergraduate students rate the extent to which they believed five domains (i.e., competence, physical attractiveness, material wealth, sociability, and morality) were related to social approval or disapproval. Participants then completed additional measures including a measure of global self-esteem and a questionnaire which required them to rate themselves in comparison to peers on each of the five aforementioned domains. On four of the five domains, there were significant interactions between ratings of the self and ratings of approval/disapproval in predicting self-esteem. For example, self-ratings of attractiveness were more strongly related to self-esteem for participants who believed that attractiveness was highly important for social approval than for participants who did not.

In another study, vanDellen, Hoy, and Hoyle (2009) found that ratings of the relevance of each of the seven contingencies of self-worth identified by Crocker et al. (2003) to self-esteem and social judgements were significantly correlated, further supporting the idea that contingencies of self-worth actually reflect domains that are perceived to be important for social approval.

The theoretical perspectives described above may provide a useful framework for better understanding women's motivations for, and the impact of, posting selfies on social media. The present research draws from these theories and models and is described in greater detail in the following sections.

Overview of the Dissertation Studies

The overarching aims of this dissertation were to better understand what motivates women to post selfies on social media and to determine how receiving feedback on selfies affects their self-esteem and appearance satisfaction. Three studies were conducted, each of which are described in greater detail below. Study I was correlational and the focus was on testing a model that may explain why women post selfies on social media. The aims of Study II and III were to understand the impact of receiving feedback on selfies posted on social media. Study I and II used independent samples, and the participants in Study III were a subset of the women who participated in Study I. Data first were collected for Studies I and III and then for Study II. Ethics approval for all three studies were obtained from the University of Windsor's Research Ethics Board (REB). The hypotheses and results for each study are summarized in Appendix A.

CHAPTER 2

Study I: Purpose, Rationale, and Hypotheses

The aim of Study I was to test a mediation model that may help explain why women post selfies on social media. As mentioned previously, the first part of the Transactional Model of Social Media and Body Image Concerns (see Figure 1) suggests that individual factors, such as internalization of the thin-ideal, depressive symptoms, low self-esteem, and the centrality of appearance to personal self-worth, lead women to use appearance-related social media (Perloff, 2014a), such as posting selfies. Although, there is evidence that some of the person-level variables Perloff (2014a) proposed are related to overall social media use (e.g., Lup, et al., 2015; Tiggemann & Slater, 2013), few studies have assessed the relevance of these variables specifically to posting selfies on social media. Moreover, at the time this study was proposed, there was only one study that had assessed the relationship between centrality of appearance for self-worth and posting photos of oneself on social media. In an online study conducted among 311 male and female undergraduate students, Stefanone, Lackaff, and Rosen (2011) found that greater appearance contingent self-worth was associated with posting more photos of oneself on social media. Other contingencies of self-worth (e.g., competition, academic achievement, family support) also were significantly related to posting photos of oneself, but the correlation between appearance contingent self-worth and photo sharing was stronger than the correlations between posting photos and the other contingencies of self-worth.

Perloff (2014a) used the Uses and Gratification theory to explain why women high in appearance contingent self-worth may be more likely to use appearance-related

social media. As mentioned previously, the Uses and Gratification theory posits that people are motivated to use certain forms of media based on the gratification they either hope to obtain or have obtained previously (Ruggiero, 2000). As such, within the Transactional Model of Social Media and Body Image Concerns, it is proposed that women who base their self-worth on their appearance use appearance-related social media because they are seeking affirmation of their "physical and social attractiveness" (Perloff, 2014a, p. 369). These potential gratifications are consistent with those that have been identified in research on the uses and gratifications associated with posting selfies on social media, such as obtaining feedback from others and enhancing self-confidence (Sung et al., 2016), and they seem logical when considered in the context of the Contingencies of Self-Worth and Sociometer theories.

As mentioned previously, these two theories of self-esteem, when combined, suggest that people attempt to enhance their self-esteem through successes in domains that they perceive as being important for social inclusion, consistent with MacDonald et al.'s (2003) assertion that contingencies of self-worth reflect contingencies of relational value. Thus, women who are higher in appearance contingent self-worth believe that their appearance is an important factor in determining whether they will be accepted by others. Moreover, since appearance is an external contingency of self-worth (Crocker & Wolfe, 2001), which means that self-esteem is dependent on others, women who base their self-worth on appearance may have to seek frequent validation of their physical appearance in order to maintain their self-esteem (Crocker, 2002).

Thus, it follows that the extent to which women base their self-worth on their appearance should predict their desire to obtain positive appearance-related feedback

from others. Moreover, these women may be more likely to post selfies on social media in the hopes of obtaining positive-appearance related feedback (see Figure 2). Obtaining such feedback could validate both the selfie-posters' physical appearance and their sense of connectedness to others, thereby helping to maintain or enhance self-esteem, as would be suggested by the Sociometer Theory. Indeed, as mentioned previously, researchers have found that likes on social media can be experienced as liking how one looks in a photograph as well as relational value (Gao, 2016).

Posting selfies on social media may be perceived by women as a good way to obtain positive appearance-related feedback from others, as there is a fairly high likelihood that they will obtain their sought-gratification. Approximately 60% of women receive positive comments on the selfies they post on social media either "often" or "always", and 70% of women report receiving either "several" or "a lot" of likes on their photographs (Porch, 2015, p. 43-44). Additionally, given that selfies are created and posted by the individual, women may view selfies as a controllable means of obtaining positive appearance-related feedback, as they are able to post a photograph that they think has a high likelihood of eliciting positive feedback. That is, women are able to take multiple photographs in order to find one worthy of posting (Alblooshi, 2015) based on how they look in the photograph (Siibak, 2009), and then enhance their appearance in the photograph given the technological affordance of photograph editing that is associated with most social media platforms.

Therefore, the following are hypothesized:

H1: Appearance contingent self-worth will be positively correlated with the frequency with which women post selfies on social media and the proportion of their

posted images that are selfies.

H2: The correlations between appearance contingent self-worth and frequency of selfie-posting and proportion of selfies will be stronger than the correlations between proportion of selfies posted and other contingencies of self-worth.

H3: The relations between appearance contingent self-worth and the frequency and proportion of selfie-posting will be mediated by the desire to obtain positive appearance feedback (See Figure 2).

Narcissism and age will be measured and potentially controlled for in the latter analysis given that both have been correlated with the frequency of selfie posting (Weiser, 2015).

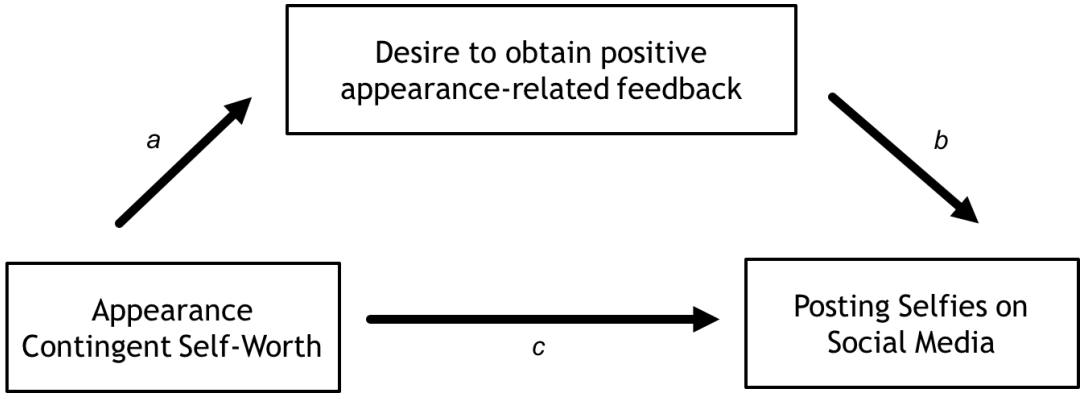

Figure 2. Proposed mediation model

Supplementary analysis. In the Transactional Model of Social Media and Body Image Concerns, Perloff (2014a) posited that women with low self-esteem would be more likely than women with high self-esteem to seek affirmation of their physical and social attractiveness. Thus, it is possible that trait self-esteem may moderate the *a* path of the proposed mediation model (see Figure 3). That is, women who base their self-worth

on their appearance may be even more likely to desire positive appearance feedback if they have low self-esteem. Consistent with this proposition, Scissors et al. (2016) found that lower self-esteem was associated with greater perceived importance of receiving likes on Facebook. Moreover, Alblooshi (2015) found that people who take selfies with the hope of increasing their self-confidence have lower self-esteem than individuals who post selfies for other reasons. However, women high in appearance contingent self-worth typically have lower self-esteem, and this relation has been found to have a moderate effect size (Sanchez & Kwang, 2007). Given that appearance contingent self-worth and self-esteem are strongly related, it may be the case that there will not be sufficient variance to detect a moderated effect. That is, there may be very few individuals who report high appearance contingent self-worth and high self-esteem or low appearance contingent self-worth and low self-esteem. Thus, this model was proposed as a supplementary analysis separate from the simple mediation model outlined in Figure 2 that would only be assessed if the correlation between appearance contingent self-worth and self-esteem was less than 0.8 and therefore did not violate the assumption of absence of multicollinearity (Field, 2009).

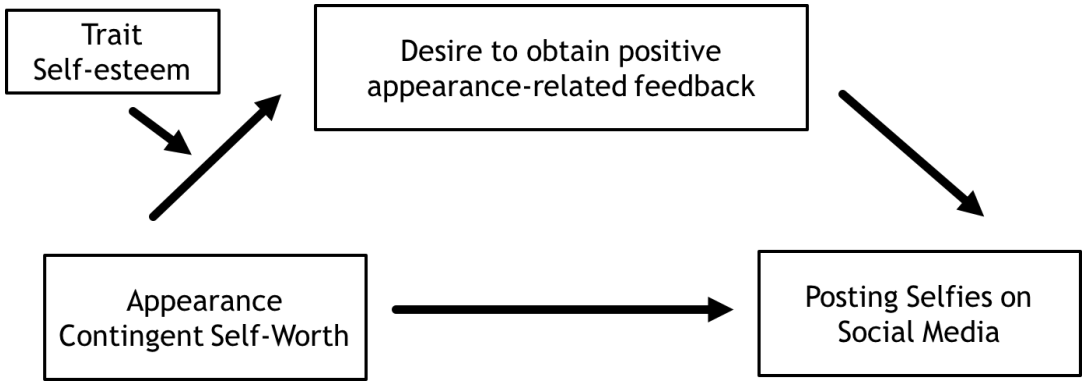

Figure 3. Potential moderated mediation model

Study I Methods

Participants

Participants were recruited via the University of Windsor's participant pool, through which students receive bonus marks in exchange for study participation. Inclusion criteria were: (1) identifying as female, (2) having an active social media account that allows photograph posting (e.g., Instagram) for the past two months, and (3) ownership of a webcam or cell phone with a functional front-facing camera (see Appendix B for screening questions). The latter criterion was meant to ensure that all potential participants had the means to take a selfie, and could therefore be a potential 'selfie-taker'.

Data were collected from 303 women, and first checked for valid responding. Six individuals failed two or more of the three validity checks (see Measures), and were removed from all analyses, resulting in a final sample size of 297. These women ranged in age from 18 to 43 years old (M = 21.00, SD = 2.95), and the majority were single (93.5%). With respect to racial/ethnic identity, 67.7% identified as Caucasian/European (n = 201), 8.8% as Arab (n = 26), 5.7% as African Canadian/Black (n = 17), 4% as South Asian (n = 11), 2% as Hispanic (n = 6), 0.3% as Native American (n = 1) and 7.7% identified as other/mixed (n = 23). In terms of level of education, all participants were undergraduate students; 15.5% were in their first year (n = 46), 25.3% were in their second year (n = 75), 27.6% were in their third year (n = 82), 23.9% (n = 71) were in their fourth year, and 7.7% had completed more than four years of university (n = 23).

Measures

Descriptors. Demographic information was obtained using a demographics questionnaire that contained questions about age, gender, marital status, ethnicity, and education (see Appendix C). Descriptive information about participants' social media use was obtained via the Selfie and Social Media Questionnaire, which was created for this study (see Criterion variables), and the Photo Manipulation Scale.

The Photo Manipulation Scale (McLean et al., 2015) is a 10-item measure of the extent to which people edit photographs of themselves (see Appendix D). Individuals respond to items such as "Edit or use apps to smooth skin" from 1(*Never*) to 5 (*Always*). A total score is obtained by summing all responses, and higher scores indicate that respondents edit photographs of themselves more often. The Photo Manipulation Scale has been found to have good internal consistency with a Cronbach's alpha of .85 and good four-week test re-test reliability of .74 (McLean et al., 2015). In the present study, the Photo Manipulation Scale had a Cronbach's alpha of .84.

Predictor Variable. The Contingencies of Self-Worth Scale (CSWS; Crocker, Luhtanen, Cooper, & Bourvrette, 2003b) is a 35-item self-report measure assessing the seven main contingencies of self-worth: Academic Competency, Competition, Approval from Others, Appearance, Virtue, God's Love, and Family Support (see Appendix E). Individuals respond to items such as "When I think I look attractive, I feel good about myself" on a 7-point Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Subscale scores are obtained by reverse-scoring the reversed items and calculating the mean for all relevant items, such that higher average scores are associated with heightened importance of a particular domain for perceived self-worth. The subscales

have been found to have good internal consistency with Cronbach's alphas ranging from .82 to .96 (Crocker et al., 2003b). There is also good three-month test-retest reliability, with correlations for the subscales ranging from .68 to .92 (Crocker et al., 2003b). The appearance subscale was of particular interest in this study, and has been found to have a Cronbach's alpha of. 83 and three-month test-retest reliability of .75 (Crocker et al., 2003b). In the present study, the CSWS subscales had Cronbach's alphas ranging from .77 to 97, and the alpha for the appearance subscale was .77.

Mediator Variable. The Revised Excessive Reassurance Seeking Scale (Revised ERS; Nesi, 2015) is a 10-item self-report measure assessing excessive reassurance seeking (see Appendix F). The three appearance-related items from this measure were modified for use in this study to assess the desire to obtain positive appearance-related feedback. More specifically, (1) I Often ask people If I look attractive, (2) I often ask people if they think my clothes look okay, and (3) I often ask people if my weight or body shape is okay were changed to (1) I want to know if other people think I look attractive, (2) I want to know if other people think my clothes look okay and (3) I want to know if other people think my weight or body shape is okay, respectively. Individuals respond to these items on a scale from 1 (*Not at all True*) to 5 *(Extremely True*). A total score was obtained by summing the scores on the three items, such that higher scores indicate greater desire to obtain positive appearance related feedback. The full 10-item Revised ERS has been found to have excellent internal consistency with a Cronbach's alpha of .90 (Nesi, 2015). Cronbach's alpha for the three modified items used in the present study was .85.

Criterion Variables. The Selfie and Social Media Questionnaire is a 20-item questionnaire that assesses social media use and the frequency with which participants post selfies on social media and the proportion of their posted-photographs that are selfies (see Appendix G). It was created for use in the present study based on measures used in other studies (e.g., McLean et al., 2015, Santarossa, 2015). First, participants are asked to respond to items about their social media use, such as which social media platforms they use and whether their accounts are public or private. Then they are presented with a definition of a selfie, as has been done in other studies (e.g., Mclean et al., 2015), along with a visual that distinguishes selfies from "usies" (see Figure 4). With these definitions in mind, participants are asked questions about their photograph taking and posting behaviours. More specifically, participants are asked whether they had ever engaged in a certain behaviour, to which they respond with *yes* or *no*. Then, they are presented with follow up questions and respond to items about frequency on a scale from 1 (*less than once a month)* to 7 (*more than twice a day*). Although usies are not of interest in the present study, participants are presented with questions about usies before questions about selfies to help ensure that people are distinguishing between the two types of photographs. Additionally, they are asked to indicate the number of photographs they have posted on social media in the past two months, and the number of these photographs that were selfies and usies. These responses are used to compute the proportion of the photographs posted that are selfies and/or usies. Lastly, participants are asked about their expected number of likes on selfies posted on Instagram as this information is necessary for Study III.

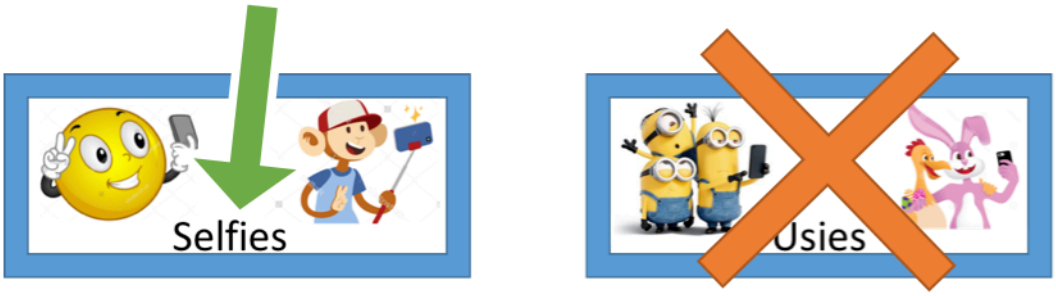

Figure 4. Visual explanation of the difference between selfies and usies

Potential Moderator Variable. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is a 10-item self-report measure assessing global trait self-esteem (see Appendix H). Individuals respond to items such as "I feel that I have a number of good qualities" on a 4-point scale from 0 (*strongly disagree*) to 3 (*strongly agree*). Items are summed to obtain a total score such that higher scores reflect greater trait self-esteem. The RSES has been found to have excellent internal consistency with a Cronbach's alpha of .90 (Chang, 2014). In the present study, the RSES also had a Cronbach's alpha of .90.

Covariates. The Narcissistic Personality Inventory (NPI-40; Raskin & Terry, 1988) is a 40 paired-item self-report measure assessing trait narcissism (see Appendix I). Individuals respond by selecting one response from each pair such as "I prefer to blend in with the crowd" and "I like to be the center of attention." Within each pair, the more narcissistic response is scored 1 and the other response is scored 0. Scores on seven subscales can be computed in addition to a total score. Only the total score was used in the present study. It is computed by summing all items, such that higher scores reflect greater levels of trait narcissism. The total scale has been found to have good internal consistency with a Cronbach's alpha of .85 (Barry et al., 2015), and good 90-day test-

retest validity (r = .81; del Rosario & White, 2005). In the present study, the NPI-40 had a Cronbach's alpha of .83.

Additional Measures.

As mentioned previously, data for Study I was collected first. A subset of the participants from Study I subsequently participated in Study III, and data for Study II was collected from an independent sample after the data collection for Study I concluded. Since Studies II and III built on the data collection for Study I, some measures intended for use in Studies II and III were administered in Study I, as described below.

Measures to understand participant differences in Study II. In Study II, women's Instagram accounts were coded. These accounts can be either public or private. However, there was limited research documenting similarities or differences between individuals with public and private Instagram accounts in terms of constructs previously researched in the area of social media use (e.g., self-esteem, depressive symptoms, body image, disordered eating, narcissistic personality traits). This information was needed to determine whether it would be appropriate to analyse data from both women with public and private Instagram accounts together. Most relevant constructs were already measured as part of Study I, with the exception of body image and disordered eating. Therefore, the Eating Disorder Inventory-2, a measure with subscales assessing these constructs, was administered.

The Eating Disorder Inventory-2 (EDI-2; Garner, 1991) is a 91-item measure of the symptoms and psychological traits associated with eating disorders (see Appendix J). The EDI-2 consists of 11 subscales, but only the Body Dissatisfaction (EDI-2 BD), Bulimia (EDI-2 B), and Drive for Thinness (EDI-2 DT) subscales were included in this

study, as they are most commonly measured in studies of social media use. Individuals respond to items such as "I think that my hips are too big" using a 6-point Likert-type scale from 1 (*never*) to 6 (*always*). Responses are summed and higher scores indicate more disturbance. The EDI-2 BD, B, and DT subscales have been found to have good to excellent internal consistencies with Cronbach's alphas of .93 (Spillane, Boerner, Anderson, & Smith, 2004), .84 (Chang, 2014), and .90 (Spillane et al., 2004), respectively. In the present study, the EDI-2 BD, B and DT subscales had Cronbach's alphas of .89, .84, and .90, respectively.

Additionally, a measure of fear of negative evaluation (see Appendix K) was included, as conceptually, individuals with private and public accounts may differ on this construct; individuals high in fear of negative evaluation are more likely to perceive information as being private and are thought to be less likely to disclose personal information (Lombardo & Fantasia, 1976). Thus, although this was not a variable of interest for Study I, a measure of fear of negative evaluation was administered.

The Brief Fear of Negative Evaluation-II (BFNE; Carleton, McCreary, Norton, & Asmundson, 2006) is a 12-item measure assessing the fear of being evaluated negatively by others (see Appendix K). Individuals respond to items such as "I am afraid that other people will not approve of me" on a 5-point scale from 0 (*not at all characteristic of me*) to 4 (*extremely characteristic of me*). Items are summed to obtain a total score, and higher scores on the BFNE II reflect greater fear of negative evaluation. The BFNE has been found to have excellent internal consistency, with a Cronbach's alpha of .94 (Carleton et al., 2006). In the present study, the BFNE-II had a Cronbach's alpha of .95.

Potential Covariates in Study III. *The Beck Depression Inventory – Second edition* (BDI-II**;** Beck, Steer, & Brown; 1996) is a 21-item measure of the severity of depressive symptoms (see Appendix L). Individuals respond to items such as "Sadness" by selecting one of four responses indicating the degree to which they experienced the symptom over the past two weeks (e.g., 0-*I do not feel sad,* 1-*I feel sad much of the time,* 2-*I am sad all the time,* 3-*I am so sad or unhappy that I can't stand it.*). Items are summed to obtain a total score with higher scores indicating more depressive symptoms. The BDI-II has been found to have excellent internal consistency with a Cronbach's alpha of .93 (Beck et al., 1996). In the present study, the BDI-II had a Cronbach's alpha of .93.

Participants also were asked to self-report their weight in pounds and their height in feet and inches at the end of the study. This information was used to compute Body Mass Index (BMI) using the formula weight (lb)/[height (in)]^2 x 703 (Centers for Disease Control and Prevention, 2014). BMI was to be tested as a covariate in Study III because it is often correlated with the dependent variables in Study III (see Study III for more information).

Validity Checks. Three items were included in Study I to assess valid responding. Each item was added to a different measure and asked the participant to select a specific response on that particular scale. An example of one of these items is "Please select Always."

Procedure

Potential participants completed the screening questions while completing screening questions for other studies being concurrently advertised on the psychology

participant pool at the beginning of each academic term. Studies I and III were advertised together, and the advertisements for these studies were visible only to eligible participants (i.e., those whose responses to the screening questions indicated that they met inclusion criteria). After signing up for the studies on the Psychology Participant Pool, participants were e-mailed a link to Study I. Once they accessed the link, participants were presented with a consent form (see Appendix M). Those who consented then were presented with a demographics questionnaire, followed by all of the aforementioned questionnaires except the Selfie and Social Media questionnaire, in randomized order to minimize potential order effects. The Selfie and Social Media questionnaire was presented last, given that only some participants would be administered it in its entirety. That is, participants who indicated "no" to the question inquiring as to whether they have ever posted a selfie, were directed to a page with a question asking about weight and height, followed by a debriefing page, whereas participants who indicated "yes" were administered the additional items (see Appendix G), followed by the screening questions for Study III, the questions about weight and height, and the debriefing page. Figure 5 depicts the order of questionnaires administered.

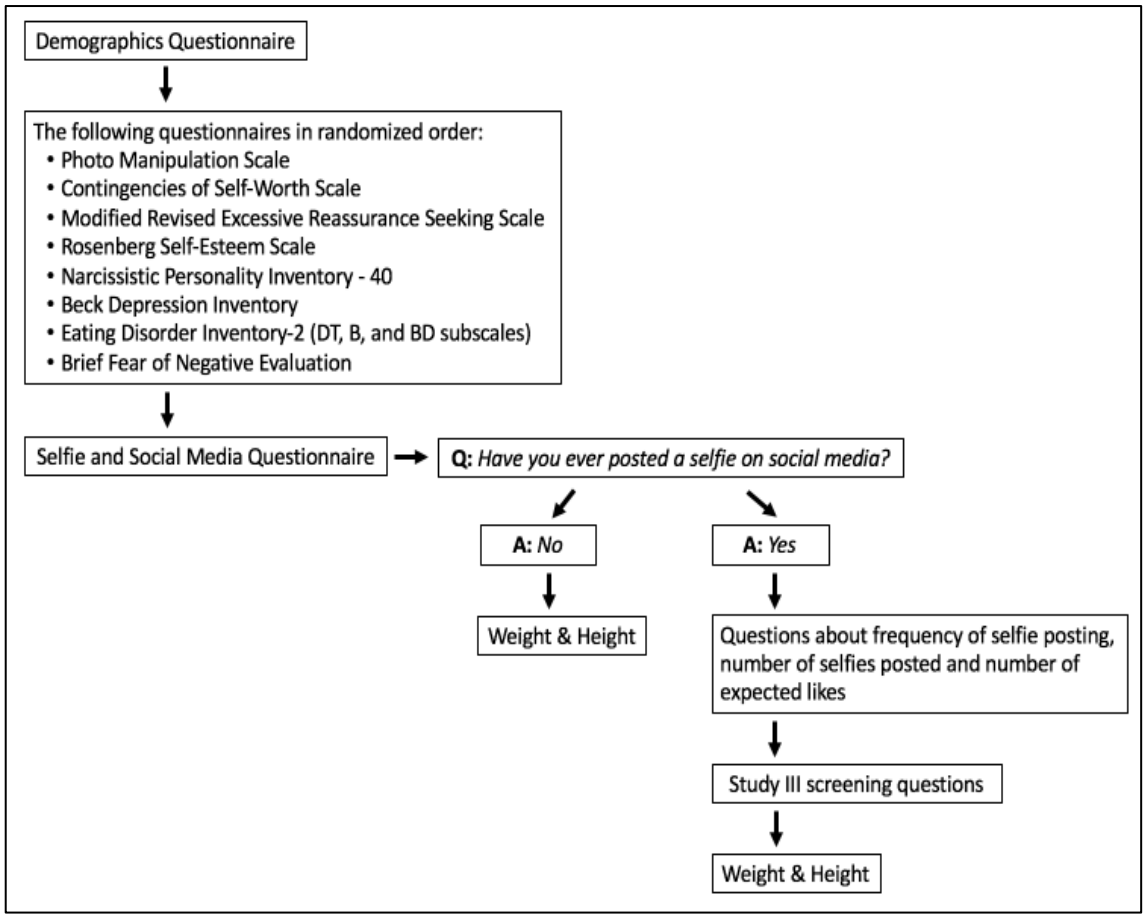

Figure 5. Order of questionnaires.

Study I Results

Overview of Data Analyses

All statistical analyses were performed using IBM SPSS Statistics (Version 25) for Mac, with the exception of the analyses for Hypothesis 2. Data were first checked for valid responding, as indicated above. Then, a missing data analysis was conducted and the assumptions of Pearson's *r* and OLS regression analyses were assessed. Additionally, the data were checked for outliers as extreme cases can influence regression equations (Tabachnick & Fidell, 2007). Hypothesis 1 was tested using correlations. Hypothesis 2 was tested using Lee and Preacher's (2013) calculation for the test of the difference

between two dependent correlations with one variable in common (http://quantpsy.org/corrtest/corrtest2.htm), which uses z-scores. Lastly, Hypothesis 3 was tested using Hayes' PROCESS macro. PROCESS macro can be used within SPSS and employs Ordinary Least Squares (OLS) regression to estimate the indirect effects in mediation models as well as bootstrapping to obtain confidence intervals (Hayes, 2013). A confidence interval that does not overlap zero is indicative of a statistically significant result.

Preliminary Analyses

Missing data. A missing data analysis was conducted at the item level. Less than 0.32% of all potential values were missing, and the percentage of missing values for each item ranged from 0 - 1.7%. Bennett (2001) suggests that results are susceptible to bias when there is more than 10% missing data, and Schaefer (1999) suggests a cut-off of 5%. Thus, the amount of missing data in the present study is considered to be inconsequential. With respect to the pattern of missing data, the latter can be missing completely at random (MCAR), missing at random (MAR), or not missing at random (NMAR; Allison, 2001; Bennett, 2001; Schlomer, Bauman, & Card, 2010). Little's MCAR test was significant, χ^2 (11410) = 11907.37, p = .001, indicating that the data were not missing completely at random (MCAR), which is not uncommon (Bennett, 2001). Thus, the data could be either MAR, meaning that differences between individuals with and without missing data are not attributable to the variables of interest, or NMAR, meaning that the missing data points are associated with the scores that would have been present if the participant had responded (Schlomer et al., 2010) The MAR pattern of missing data is considered "ignorable" (Bennett, 2001, p. 464), but there is no way to verify that the data

are in fact MAR (Allison, 2001; Fox-Wasylyshyn & El-Masri, 2005). Further, NMAR cannot be determined in the present study, as it requires access to the missing values (Schlomer et al., 2010). Thus, Schlomer et al. (2010) suggest that researchers think about the data at a conceptual level and consider whether individuals may have skipped an item as a result of being high/low on that particular variable, and assume the data are MAR if there are "no indications to the contrary" (p. 3). Inspection of the dataset revealed that none of the individuals identified as univariate outliers had missing data on the respective measure/subscale, suggesting that non-responders did not skip the questions due to having excessively high/low scores. Thus, the data were assumed to be MAR, and missing data were replaced using methods that do not rely on the assumption that the data are MCAR.

Item-level missing data were replaced using case mean substitution for all subscales/scales, except the NPI. That is, after reverse scoring items that were reverse-worded, individuals' missing items on each scale were replaced with the mean of that participant's responses to the remaining items on the scale to which the missing value belonged. This technique is suitable for data obtained through self-report measures, and is recommended for use with item, rather than variable level missing data (Fox-Wasylyshyn & El-Masri, 2005; Schlomer et al., 2010). Missing data on the NPI were handled differently, given that each item was scored, 0 or 1. Kansi (2003) used the mode of each participants' items to impute missing values on the NPI for participants with only one missing item, and excluded anyone with more than one missing value on the NPI. In accordance with this methodology, the mode was used to replace missing items for individuals with only one missing item. However, rather than exclude participants (n = 5)

with more than one missing value, expectation maximization (EM) was used to compute the total NPI score for these individuals. EM was used, rather than other imputation methods such as multiple imputation, as it does not require that the data be MCAR (Bennett, 2001).

In addition to item-level missing data, there were instances of variable-level missing data (e.g., frequency of selfie posting). The Selfie and Social Media Questionnaire was designed such that participants could indicate that they had never taken and/or posted a photo, selfie, or usie, on social media and skip questions pertaining to these behaviours. Thus, the absence of data is reflective of those participants' true photo behaviours and was not imputed. As a result, *n*s for analyses using data obtained from this questionnaire varied, which is noted in all relevant figures and tables.

Implausible values. There were seven individuals whose responses suggested errors in responding on part of the Selfie and Social Media Questionnaire. The last few items on this questionnaire asked participants to report the number of photographs posted in the past two months, followed by the number "of those photos" that were selfies or usies. In each of these seven cases, the total number of selfies and usies reported exceeded the number of photographs they reported posting, suggesting that there was not a clear understanding of the question, or errors in the entering of their responses. Thus, these individuals were excluded from all analyses pertaining to the proportion of photographs posted that were selfies or usies. Their data was retained for all other analyses as none of these individuals failed the validity checks, and further inspection of each of their data did not suggest invalid responding elsewhere in the survey. That is, there were no questionnaires on which they selected the same response throughout, nor

were there any clear patterns to their responses.

In addition, when computing the proportion of photographs posted that were selfies by dividing the number of selfies reported by the number of photographs, proportions could not be computed for 20 individuals who responded "yes" when asked if they had ever posted a selfie. Proportions for these 20 individuals could not be computed because they reported that they had posted zero photos within the past two months, and it is impossible to divide a number by zero. Rather than omit these 20 individuals from all analyses with the proportion of photos posted that were selfies as an outcome variable, a value of zero was imputed for these individuals as their proportion of photos posted in the past two months that were selfies.

Outliers and normality. Data were checked for univariate outliers using z-scores exceeding |3.29| (Field, 2009), and normality was assessed using skewness, kurtosis, and the Shapiro-Wilks test, which is considered to be more accurate than the Komolgorov-Smirnov test (Field, 2009). Per Kline (2011), cut-off values of +/- 3 and +/- 10 were used to assess skewness and kurtosis, respectively. With the exception of the frequency of selfie posting, and proportion of photos posted in the past two months that were selfies, all variables' level of skewness and kurtosis fell within the acceptable ranges. However, the Shapiro-Wilks test was significant for all variables, suggesting that none of them were normally distributed (all ps < .021). Inspection of histograms revealed that some variables were negatively skewed (e.g., CSWS – appearance), whereas other variables were positively skewed (e.g., frequency of selfie posting).

Univariate outliers then were reduced using Windsorization, in which outliers were replaced by values one unit higher/lower than the next most extreme score on that

variable (Field, 2009; Tabachnik and Fidell, 2007). Even after univariate outliers were Windsorized, the data were not normally distributed based on Shapiro-Wilks tests (all *p*s < .021). Thus, the log and square root transformations were attempted on all variables to determine whether they could help to normalize the distributions. Variables that were negatively skewed were reversed prior to applying the transformations. The log transformation did not improve normality of any of the variables and only the CSWS appearance, virtue, and approval from others subscales were normally distributed after applying the square root transformation. As such, the square root transformation was only retained for these three variables. It is of note that all three variables were all negatively skewed prior to transformation and, therefore, reversed, meaning that their interpretation has been altered such that higher scores reflect a reduced importance of each factor for self-worth.

Multivariate outliers among the predictor variables for the mediation analyses (Hypothesis 3) were also checked. This was done using a leverage cut-off of 0.06, based on the formula 3(k+1)/n, where k is the number of predictors, and n is the number of cases (Cohen, Cohen, West, & Aiken, 2003). Three individuals were identified as multivariate outliers, but their data was retained as they were not found to be influential cases based on Cook's values less than one.

Linearity, homoscedasticity, multicollinearity, and normality and independence of errors. Linearity and homoscedasticity were assessed by inspecting plots of the standardized residuals (ZRESID) against the standardized predicted values of the dependent variables (ZPRED). The dots did not appear to "funnel out" or curve, suggesting that both assumptions were met (Field, 2009, p. 247). Further, the dots

appeared to be fairly evenly dispersed around zero (Field, 2009). To assess normality of errors, histograms and P-P plots of the standardized residuals were inspected. The dots on the P-P plot were fairly close to the line, but the histograms appeared to slightly positively skewed. However, this was not deemed to problematic as the assumption of normality "is one of the least important" and only severe violations of normality tend to influence regression equations (Hayes, 2013, p. 54). Absence of multicollinearity was assessed using VIFs and tolerances, which were within acceptable limits, of less than 10 (range = 1.01 – 1.28) and greater than 0.1 (range = 0.78 -0.99), respectively (Field, 2009). Lastly, the Durbin-Watson statistic was used to assess independence of errors, and was close to the suggested value of two (range = 1.86 – 2.22) indicating that the assumption was met.

Descriptive Information

Social media use. Participants reported using between one and seven social media platforms (M = 3.95, SD = 1.16). The most commonly used were Facebook, Instagram, Snapchat, and Twitter which were used by 94.28, 87.54, 85.19 and 57.58 percent of the sample, respectively. The numbers of women who reported using each social media platform is displayed in Figure 6. Snapchat was omitted from the list of options provided to participants by mistake, therefore, the number of individuals who use Snapchat was determined by tallying the number of individuals who either listed it under "Other" or responded to the questions about Snapchat later in the survey rather than indicating "not applicable." Additionally, Tumblr was not included in the initial list of social media platforms presented to participants, but was reported under "Other" with high frequency. Therefore, a new category was created for it. Given that individuals who

reported using Snapchat or Tumblr were recoded, they were not counted towards the number of people who reported using "Other" in Figure 6.

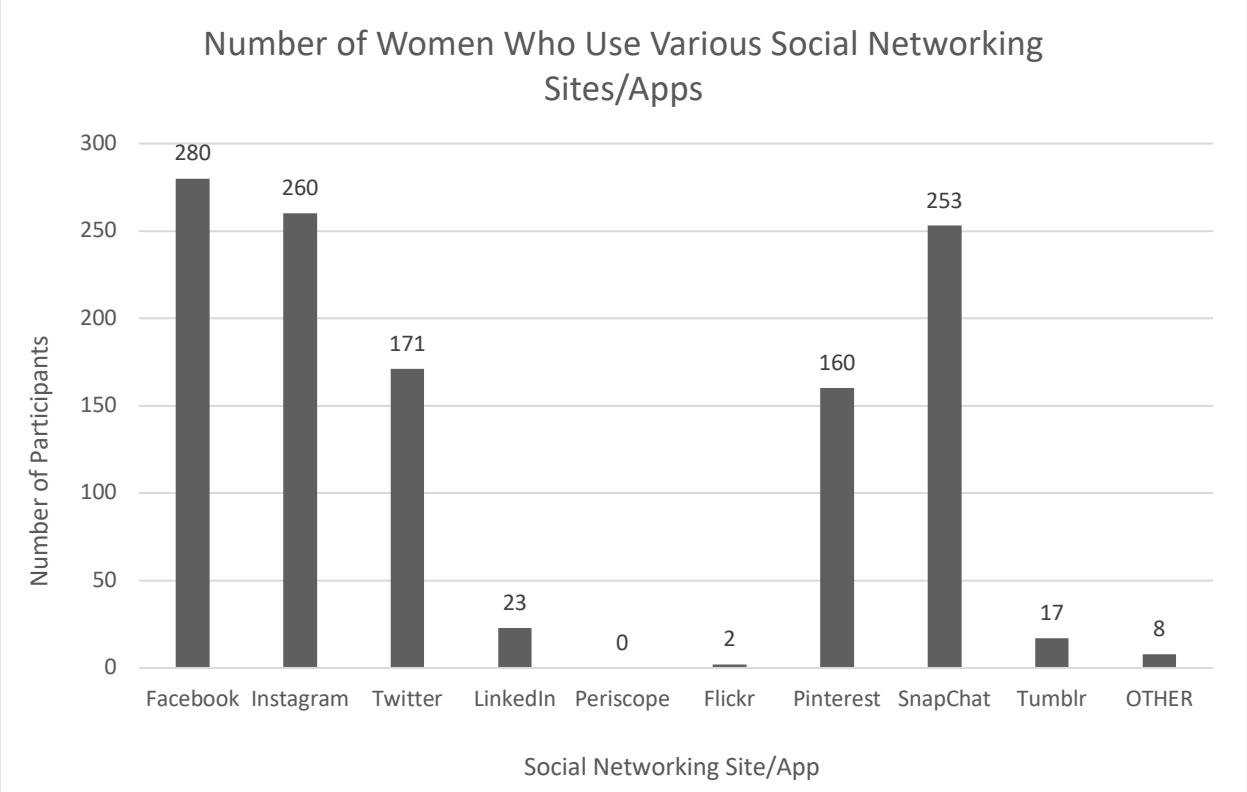

Figure 6. Number of women who use each social media platform. ($N = 297$)

Participants responded to additional questions about their use of Facebook, Instagram, Snapchat, and Twitter. The majority of women reported that they have private accounts on Facebook (82.5%), Instagram (65.5%) and Snapchat (67.3%), whereas public accounts were more common on Twitter (57.9%), such that only 39.2% of women had private Twitter accounts. Most participants knew the privacy settings for each of their social media accounts, although numerous Snapchat users were unaware of their privacy setting on that particular app ($n = 42$). The number of women with private, public, or unknown settings on Facebook, Instagram, Snapchat and Twitter are presented in Figure 7.

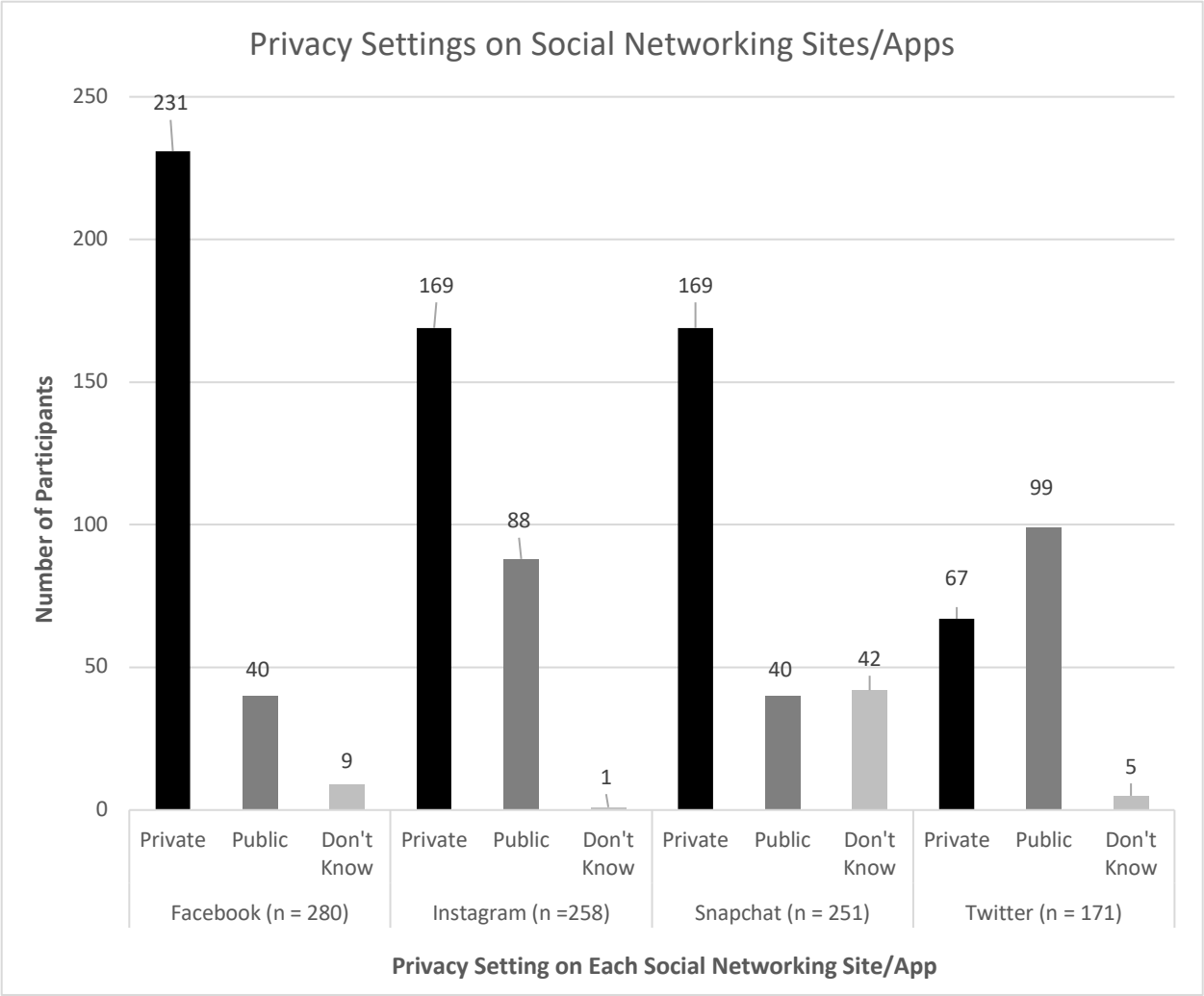

Figure 7. Privacy settings on each of the four most commonly used social media platforms
Note: Two Instagram users and two Snapchat users did not respond to this question, hence the reduced *n*s.

On average, participants reported spending 62.93 (*SD* = 78.10) minutes on Facebook, 67.38 (*SD* = 70.70) minutes on Instagram, 59.49 (*SD* = 67.66) minutes on Snapchat, and 50.54 (*SD* = 63. 08) minutes on Twitter each day, with time spent on any of these ranging from 0-720 minutes per day. When combined, participants reportedly spent between 1 and 780 minutes on these four sites/apps (*M* = 190.25, *SD* = 149.17) daily. It seems that some participants may have reported the overall amount of time

during which they intermittently accessed each social media platform, rather than time actually spent on each social media platforms given the high numbers. Regardless, the total time spent on social media more generally each day may be even greater given that participants were only asked to report how much time they spent on each of the aforementioned social media platforms. Participants had between 1-5000 friends on Facebook (M = 469.46, SD = 436.91), and the number of followers participants had as well as the number of individuals they followed on Instagram, Snapchat, and Twitter are reported in Table 1.

Table 1
Participants' number of followers and people being followed on social media platforms

Social media platform	*n*	Number of followers		Number of people being followed	
		Range	Mean (*SD*)	Range	Mean (SD)
Instagram	257	0-5000	378.92(439.79)	3-1152	343.32 (236.74)
Snapchat	249	0-300	64.72 (54.21)	0-300	61.41 (53.55)
Twitter	170	0-3000	309.97 (363.13)	0-1970	254.87 (255.52)

Photograph related behaviours. The majority of participants had posted at least one photograph on social media (98.65%) at some point, and 54.21% of women reported posting photographs with a frequency of once a month or less. In terms of posting selfies or usies on social media, 95.62 and 96.27 percent of women had posted at least one of these at some point, respectively. However, slightly more people had taken, but not necessarily posted, a selfie (98.99%) or an usie (97.64%). Women reported taking selfies and usies more often than they post them. That is, 71.04% of women reported taking usies once a month or more, whereas only 52.5% of women posted usies with such

frequency. Similarly, 68.35% of women took selfies once a month or more often, but only 51.06 reported posting with such frequency. In the past two months, participants posted between 0 and 200 photographs (M = 12.61, SD = 27.66). On average, 3.67 (SD = 7.65) of these images were usies and 3.18 (SD = 7.64) were selfies. When asked about the frequency with which individuals hashtagged the photographs, usies or selfies they posted online, the most frequently selected response was "Never" (>33%). Only 12.21% and 8.16% of participants reported hashtagging usies and selfies, respectively, often or always.

With respect to editing photographs, the average score on the Photo Manipulation scale was 20.48 (SD = 7.02; maximum score = 50). The mean score and frequency of response options selected for each item were assessed to determine which photograph editing strategies were used most often. The use of a filter to change the overall appearance of the photograph was the most commonly used strategy (M = 3.26, SD = 1.26) such that 48.49% of participants reported applying filters "often" or "always." The next two most commonly used approaches were altering the light/darkness of the image (M = 3.24, SD = 1.15; 43.43% selected "often" or "always") and editing photographs to hide blemishes or pimples (M = 2.32, SD = 1.31; 21.88% selected "often" or "always"). The majority of participants (70.37%) indicated that they "never" use editing strategies that involve altering their size or a part of their body.

Correlations. Correlations between all measures administered in Study I were computed to ensure that variables correlated in the expected directions, therefore, indicating that the data were scored correctly. Age also was included, as it is a variable of interest in this study. The correlations are presented in Table 2. It is of note that all

correlations were bootstrapped given that most variables were not normally distributed. Due to space constraints, the confidence intervals are not presented in the table. Further, correlations were conducted with the contingencies of self-worth appearance, virtue, and approval subscales in their original and transformed states. The correlations on the top of the diagonal were computed using the non-transformed data for ease of interpretation, and the correlations from transformed data are presented on the bottom half of the diagonal.

Table 2
Correlation Matrix for all Study I Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Selfie- Freq.[a]		.31**	.03	.11	.19**	.14*	-.07	.00	-.05	.02	.02	-.05	-.03	-.01	.07	.01	.10	.00	.09
2. Selfie – Prop.[b]			-.07	.08	.11	.07	-.10	-.05	-.20**	-.04	.04	-.10	-.11	-.10	.17**	.05	.11	.02	.02
3. Age				-.03	-.05	-.04	-.04	.00	.01	.02	-.06	.03	.11	.04	.06	.04	.05	.06	-.07
4. PMS					.07	.34**	-.13*	.18**	.12*	.16**	.11	.02	.05	.21**	.06	.17**	.24**	.12*	.27**
5. NPI-40						.06	.35**	-.01	.10	.22**	.13*	-.05	-.19**	-.24**	-.15*	-.05	-.02	-.23**	-.11
6. Feedback							-.13*	.47**	.13*	.28**	-.03	.14*	.15*	.39**	0.11	.26**	.23**	.19**	.52**
7. RSES								-.22**	.26**	-.08	.17**	-.14*	-.08	-.28**	-.71**	-.29**	-.43**	-.45**	-.41**
8. CSW-App.	.00	.05	-.00	-.19**	.02	-.47**	.21**		.21**	.34**	-.21**	.41**	.15*	.47**	.24**	.42**	.26**	.39**	.46**
9. CSW-Family								-.22**		.17**	.22**	.35**	.27**	.25**	-.21**	.04	-.10	-.05	.21**
10. CSW-Comp.								-.35**			.02	.45**	.16**	.24**	.07	.11	.14*	.05	.33**
11. CSW-God								.21**				-.08	.15**	-.09	-.13*	.02	.01	-.12*	-.03
12. CSW-Acad.								-.41**					.38**	.39**	.12*	.20**	.08	.15*	.40**
13. CSW-Virtue	.03	.07	-.12	-.04	.18**	-.14*	.07	.17**	-.28**	-.16**	-.15*	-.37**		.29**	.01	.11	.05	.07	.30**
14. CSW-Approv.	.01	.11	-.05	-.21**	.23**	-.39**	.29**	.48**	-.25**	-.24**	.09	-.37**	.27**		.15*	.27**	.19**	.28**	.67**
15. BDI-II								-.25**					-.02	-.16**		.31**	.52**	.34**	.34**
16. EDI-DT								-.42**					-.10	-.27**			.57**	.73**	.38**
17. EDI-B								-.26**					-.06	-.20**				.51**	.33**
18. EDI-BD								-.38**					-.06	-.28**					.32**
19. BFNE-II								-.46**					-.30**	-.67**					

Note: Selfie - Freq. = Frequency of selfie posting; Selfie – Prop. = Proportion of photos posted over the past two months that were selfies; PMS = Photo Manipulation Scale; NPI-40 = Narcissistic Personality Inventory - 40; Feedback = modified Revised Excessive Reassurance Seeking Scale; RSES = Rosenberg Self-Esteem Scale; CSW – App. = Contingencies of Self-worth Scale – Appearance subscale; CSW – family = Contingencies of Self-worth Scale – Family subscale; CSW – comp. = Contingencies of Self-worth Scale – Competition subscale; CSW – God = Contingencies of Self-worth Scale – God's Love subscale; CSW – Acad. = Contingencies of Self-worth Scale – Academic Performance subscale; CSW – virtue = Contingencies of Self-worth Scale – Virtue subscale; CSW – Approv. = Contingencies of Self-worth Scale – Others' approval subscale; BDI-II = Beck Depression Inventory –II; EDI – DT = Eating Disorder Inventory -2 – Drive for Thinness subscale; EDI – B = Eating Disorder Inventory -2 – Bulimia subscale; EDI – BD = Eating Disorder Inventory -2 – Body Dissatisfaction subscale; BFNE-II –Brief Fear of Negative Evaluation II.

a = n = 284; b = n = 277

Hypothesis 1

The first hypothesis was that appearance contingent self-worth would be positively correlated with the frequency with which women post selfies and the proportion of the photographs that women post on social media that are selfies. Correlations between each of the contingencies of self-worth and selfie posting and proportion of photographs that were selfies are presented again in Table 3 with their bootstrapped 95% confidence intervals. There were no differences when using the original or transformed data. Appearance contingent self-worth was not significantly correlated with the frequency of selfie posting, $r(282) = -.004$, $p = .951$, 95% CI [-.13, .12], or the proportion of selfies posted in the past two months, $r(275) = -.045$, $p = .458$, 95% CI [-.16, .08]. Further, none of the contingencies of self-worth were associated with the frequency of selfie posting. However, the proportion of photographs that women posted over the past two months that were selfies were significantly negatively correlated with family contingent self-worth , $r(275) = -.196$, $p = .001$, 95% CI [-.31, -.09].

Table 3

Bootstrapped correlations between the contingencies of self-worth and frequency of selfie posting and proportion of posted photographs that are selfies

	1	2	3	4	5	6	7	8	9
1. Selfies - Freq[1]	--	.314**	-.004	-.054	.023	.024	-.047	-.029	-.011
95% CI [LL, UL)		[.20, .42]	[-.13, .12]	[-.17, .06]	[-.11, .15]	[-.19, .14]	[-.17, .07]	[-.16, .09]	[-.12, .10]
2. Selfies - Proportion[2]		--	-.045	-.196**	-.042	.035	-.102	-.103	-.096
95% CI [LL, UL]			[-.16, .08]	[-.31, -.09]	[-.16, .08]	[-.09, .15]	[-.23, .02]	[-.22, .02]	[-.22, .02]
3. CSWS-Appearance	.001	.049	--	.214**	.342**	-.210**	.411**	.151*	.467**
95% CI [LL, UL]	[-.12, .11]	[-.08, .17]		[.08, .35]	[.22, .45]	[-.34, -.09]	[.31, .51]	[.05, .27]	[.35, .57]
4. CSWS-Family				--	.170**	.215**	.354**	.272**	.248**
95% CI [LL, UL]					[.07, .28]	[.09, .31]	[.24, .47]	[.15, .39]	[.14, .36]
5. CSWS-Competition					--	.022	.451**	.160**	.239**
95% CI [LL, UL]						[-.10, .15]	[.35, .55]	[.02, .29]	[.10, .37]
6. CSWS-God's love						--	-.077	.152*	-.086
95% CI [LL, UL]							[-.20, .04]	[.04, .26]	[-.20, .04]
7. CSWS-Academics							--	.372**	.386**
95% CI [LL, UL]								[.24, .48]	[.28, .48]
8. CSWS-Virtue	.026	.106	.167**	-.275**	-.157**	-.145*	-.370**	--	.265**
95% CI [LL, UL]	[-.09, .14]	[-.02, .23]	[.06, .27]	[-.39, -.16]	[-.28, -.02]	[-.25, -.03]	[-.48, -.24]		[.14, .39]
9. CSWS- approval	.012	.098	.478**	-.246**	-.238**	.090	-.374**	.268**	--
95% CI [LL, UL]	[-.01, .11]	[-.02, .22]	[.37, .58]	[-.35, -.14]	[-.36, -.11]	[-.03, .22]	[-.47, -.27]	[.14, .39]	

Note: Numbers on the top half of the diagonal are bootstrapped correlations and 95% confidence intervals for the non-transformed data. Cells on the bottom half of the diagonal were filled in only for the appearance subscale, virtue and other's approval and were done with the square root transformed variables; Selfies-Freq = Frequency of selfie posting; Selfies – Proportion = Proportion of photos posted in 2 months that were selfies; CSWS = Contingencies of Self-Worth Scale – Appearance, Family, Competition, God's Love, Academics, Virtue, and Other's Approval subscales

[1]Correlations w/frequency of selfie posting (n = 284); [2]Correlations w/ proportion of selfies posted (n = 277)

Hypothesis 2

The second hypothesis was that the correlations between appearance contingent self-worth and frequency of selfie-posting and proportion of photographs posted that are selfies would be stronger than the correlations between the other contingencies of self-worth and the frequency of selfie posting and proportion of posted photographs that are selfies. The results of Lee and Preacher (2013)'s calculation to test for the difference between two dependent correlations with one variable in common are presented in Table 4. The correlation between appearance contingent self-worth and frequency of selfie posting was not significantly different from the correlations between frequency of selfie posting and the other contingencies of self-worth (all *p*s > .251). The correlation between appearance contingent self-worth and proportion of photographs posted that are selfies was significantly different from the correlation between family-contingent self-worth and proportion of photographs posted that are selfies, z-score = 2.02, $p = .021$. However, counter to Hypothesis 2, the correlation between appearance contingent self-worth and proportion of photographs posted that are selfies was significantly weaker than the correlation with family-contingent self-worth.

Table 4
Z-scores indicating differences between correlations between each contingency of self-worth and frequency of selfie posting and proportion of posted photographs that are selfies

	CSWS Family	CSWS Competition	CSWS God's love	CSWS Academics	CSWS Virtue	CSWS Approval
r (Selfies-Freq and CSWS appearance)	z = 0.67	z = 0.28	z = -0.30	z = 0.67	z = 0.32	z = 0.11
r (Selfies-Proportion and CSWS appearance)	z = 2.02*	z = -0.04	z = -0.85	z = 0.87	z = 0.74	z = 0.82

Note: Selfies-Freq = Frequency of selfie posting; Selfies – Proportion = Proportion of photographs posted in 2 months that were selfies; CSWS = Contingencies of Self-Worth Scale – Appearance, Family, Competition, God's Love, Academics, Virtue, and Other's Approval subscales
* = $p < .05$

Hypothesis 3

The third hypothesis was that the relations between appearance contingent self-worth and the frequency of selfie-posting and proportion of photos posted that are selfies would be mediated by the desire to obtain positive appearance feedback (see Figure 1 – in Introduction). Although it could be argued that this hypothesis not be tested given that Hypothesis 1 was not confirmed, a significant correlation between X and Y is not a condition of conducting mediation analyses since significant indirect effects can be exist in the absence of significant direct effect (Hayes, 2013). Thus, Hypothesis 3 was tested despite appearance contingent self-worth and selfie posting not being significantly correlated. Model 4 in Hayes' PROCESS macro was used to assess each mediation model. Appearance contingent self-worth was analyzed in its original form given that the results did not differ when the analyses were conducted on transformed or untransformed data in the aforementioned correlations and given that PROCESS macro employs bootstrapping.

Frequency of selfie posting. Narcissism and age were tested as covariates when assessing whether the desire for appearance feedback mediated the relationship between appearance contingent self-worth and the frequency with which women post selfies online as previous findings demonstrated significant relationships between these variables and selfie posting. However, age was not significantly related to the frequency of selfie posting or the desire to obtain appearance related feedback (*p*s >.477; both 95% CIs contained "0"). Thus, it was removed from the model. Narcissism was retained as a covariate because it was significantly associated with the frequency of selfie posting, b = 0.03, SE = 0.01, p = .001, 95% CI [0.01, 0.05]. With narcissism as a covariate, there was a significant indirect effect of appearance-contingent worth on frequency of selfie posting with the desire to obtain appearance related feedback as a mediator, b = 0.10, SE = 0.04 95% CI [0.02, 0.19]. The statistics for each portion of the mediation model are presented in Figure 8. As seen in this figure, higher levels of appearance contingent self-worth were associated with greater desire to obtain appearance feedback and in turn greater frequency of selfie posting, consistent with Hypothesis 3.

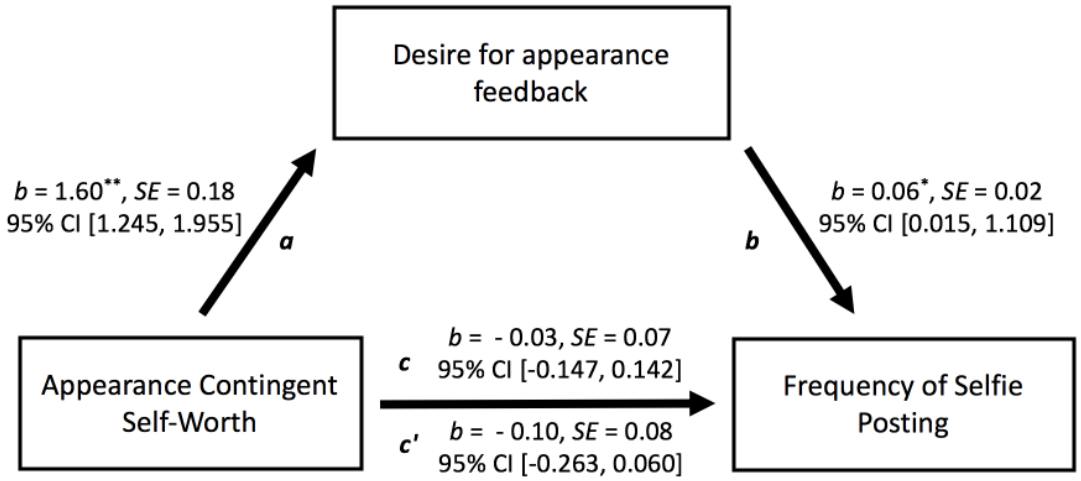

Figure 8. Mediation model assessing whether the desire for appearance feedback mediates the relation between appearance contingent self-worth and frequency of selfie posting, while controlling for narcissism. $n = 284$
$^{*} = p < .05$; $^{**} = p < .01$

Proportion of photographs posted that are selfies. Again, narcissism and age were tested as covariates when assessing the desire for appearance feedback as a mediator of the relationship between appearance contingent self-worth and the proportion of photographs that women post that are selfies. However, neither were significantly related to the proportion of photographs posted that were selfies or the desire to obtain appearance feedback (*p*s >.110; all 95% CIs contained zero). Thus, both variables were removed from the model.

The indirect effect of appearance-contingent worth on the proportion of photographs posted that were selfies with the desire to obtain appearance related feedback as a mediator was not significant, $b = 0.02$, $SE = 0.01$, 95% CI [-0.002, 0.043]. Thus, the desire to receive feedback about one's appearance did not mediate the relation between appearance contingent self-worth and the proportion of photographs posted that were selfies. The statistics for each portion of the mediation model are presented in

Figure 9. As seen in this figure, higher levels of appearance- contingent self-worth were associated with greater desire to obtain appearance feedback, but there was no relation between the desire for feedback and proportion of photographs posted that were selfies.

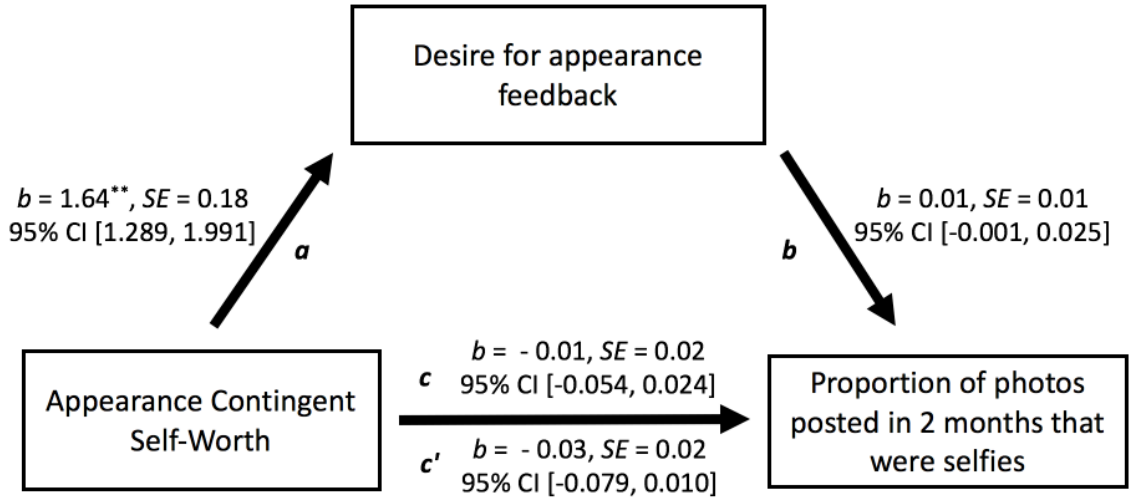

Figure 9. Mediation model assessing whether the desire for appearance feedback mediates the relation between appearance contingent self-worth and proportion of photographs posted over the past two months that were selfies. $n = 277$

Supplementary Analysis - Proposed Moderated Mediation

Trait self-esteem was proposed as a potential moderator of the *a* path in the aforementioned mediation models. As seen in Table 2, the correlation between appearance contingent self-worth and global trait self-esteem was not excessively high so as to indicate an issue with multicollinearity ($r < .80$; Field, 2009). Thus, the proposed moderated mediation models were tested (see Figure 3 – in Introduction) using Model 7 of Hayes' PROCESS macro. This macro produces an "Index of Moderated Mediation" with bootstrapped confidence intervals to indicate whether the moderated mediation is statistically different from zero (Hayes, 2015). In testing global self-esteem as a moderator of the indirect effect of appearance contingent self-worth on frequency of

selfie posting through the desire to obtain appearance feedback, the Index of Moderated Mediation was not significant, Index = 0.002, 95% CI [-0.001, 0.010]. Further, the conditional indirect effect of appearance contingent self-worth on frequency of selfie posting with desire for appearance feedback as a mediator did not differ depending on the level of self-esteem. That is, the mediation model was significant when self-esteem was assessed at one SD below the mean $b = 0.08$, $SE = 0.04$ 95% CI [0.02, 0.17], at the mean $b = 0.09$, $SE = 0.04$ 95% CI [0.02, 0.18], and at one SD above the mean $b = 0.11$, $SE = 0.05$ 95% CI [0.02, 0.21].

With the proportion of photographs that were selfies as the outcome variable, the Index of Moderated Mediation also was not significant, Index = 0.0003, 95% CI [-0.0002, 0.0016]. Further, the conditional indirect effect of appearance contingent self-worth on proportion of photographs that were selfies with desire for appearance feedback as a mediator did not differ depending on the level of self-esteem. That is, the mediation model remained non-significant when self-esteem was assessed at one SD below the mean $b = 0.02$, $SE = 0.01$ 95% CI [-0.001, 0.040], the mean $b = 0.02$, $SE = 0.01$ 95% CI [-0.003, 0.046], and one SD above the mean $b = 0.02$, $SE = 0.01$ 95% CI [-0.003, 0.046]. Thus, participants' overall level of trait self-esteem did not affect the extent to which they posted selfies as a result of basing their self-worth on their appearance and wanting feedback about it.

Exploratory Analyses

Combining selfies and usies. Although selfies were the focus on the present study, many people use the term 'selfie' as a slang word to describe any self-taken photograph (i.e., selfies and usies). Thus, participants were asked whether they

distinguish between selfies and usies as part of The Selfie and Social Media Questionnaire, and 52.5% indicated that they did not. Thus, the number of selfies and usies that participants reported posting over the past two months were summed, and a new proportion was computed to determine the proportion of photographs posted over the past two months that were selfies in the slang sense (i.e., selfies and/or usies). Hypotheses 1, 2, and 3 as well as the moderated mediation were tested again with this new outcome variable.

The proportion of selfies and/or usies posted in the past two months was not significantly related to appearance contingent self-worth, $r(275) = -.05$, $p = .421$, 95% CI [-0.17, 0.08], nor was it significantly related to any of the other contingencies of self-worth (ps > .073; see Table 5). Further, there were no significant differences in the strength of the correlation between the proportion of photographs posted that were selfies and/or usies and appearance contingent self-worth and the strength of the correlations between the former and the other contingencies of self-worth (ps > .127; See Table 6). Thus, neither Hypothesis 1 nor 2 was confirmed using this new outcome variable.

Table 5

Bootstrapped correlations between the contingencies of self-worth and proportion of posted photographs that are slang selfies (i.e., selfies and/or usies)

	CSWS Appearance	CSWS Family	CSWS Competition	CSWS God's Love	CSWS Academics	CSWS Virtue	CSWS Other's approval
Proportion of photos-slang selfies ((selfies + usies)/photos)	-.049	-.096	-.054	.058	-.089	-.108	-.012
95% CI [LL, UL]	[-.17, .08]	[-.23, .03]	[-.17, .06]	[-.06, .17]	[-.20, .02]	[-.22, .01]	[-.13, .10]

Note: CSWS = Contingencies of Self-Worth Scale*, n* = 277

Table 6

Z-scores indicating differences between correlations between each contingency of self-worth and proportion of posted photographs that are slang selfies (i.e., selfies and/or usies)

	CSWS Family	CSWS Competition	CSWS God's love	CSWS Academics	CSWS Virtue	CSWS Other's approval
r (Proportion of photographs that are slang selfies and CSWS appearance)	z = 0.62	z = 0.07	z = -1.14	z = 0.61	z = 0.75	z = -0.60

The indirect effect of appearance-contingent worth on the proportion of photographs posted that were selfies and/or usies was significant, $b = 0.05$, $SE = 0.01$, 95% CI [0.03, 0.08], while controlling for narcissism. Age was removed from the model, as it did not significantly relate to the desire to receive appearance feedback or the proportion of photographs that were selfies and/or usies ($ps > .681$). Thus, the desire for appearance feedback mediated the relation between appearance contingent self-worth and the proportion of photographs posted that were selfies and/or usies. The statistics for each portion of the mediation model are presented in Figure 10. As seen in this figure, higher appearance contingent self-worth was associated with a greater desire to obtain appearance feedback and in turn a greater proportion of photographs being posted that were selfies and/or usies.

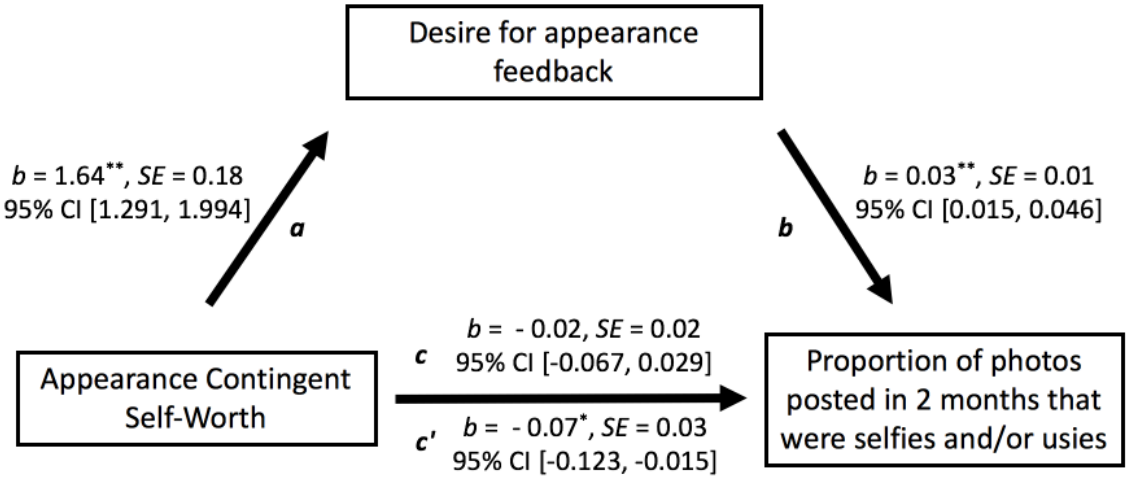

Figure 10. Mediation model assessing whether the desire for appearance feedback mediates the relation between appearance contingent self-worth and proportion of photographs posted over the past two months that were slang selfies, while controlling for narcissism. $n = 277$

With the proportion of photographs that were selfies and/or usies as the outcome variable, the Index of Moderated Mediation also was not significant, Index = 0.001, *SE* = .001, 95% CI [-0.001, 0.003]. Further, the conditional indirect effect of appearance contingent self-worth on proportion of photographs that were selfies and/or usies with desire for appearance feedback as a mediator did not differ depending on the level of global self-esteem. That is, the mediation model remained significant when self-esteem was assessed at one SD below the mean *b* = 0.04, *SE* = 0.01 95% CI [0.02, 0.08], at the mean *b* = 0.05, *SE* = 0.01 95% CI [0.03, 0.08], and at one SD above the mean *b* = 0.05, *SE* = 0.01 95% CI [0.03, 0.09]. Thus, participants' global trait self-esteem did not affect the extent to which they posted selfies and ussies combined as a result of basing their self-worth on their appearance and wanting feedback about it.

Photograph editing. As seen in the Table 2, there were significant positive correlations between the Photo Manipulation Scale, which assessed the extent to which individuals edit photographs of themselves, and appearance contingent self-worth, *r*(282) = 0.18, 95% CI [0.06, 0.30] as well as the desire to obtain appearance feedback, *r*(282) = 0.34, 95% CI [0.23, 0.45]. Thus, although this measure was initially included for descriptive purposes, an exploratory analysis was conducted to determine whether the desire to obtain appearance feedback mediated the relation between appearance contingent self-worth and the extent to which women edit photos of themselves using Model 4 of Hayes' PROCESS macro.

Consistent with the previous analyses, narcissism and age initially were tested as covariates as Fox and Rooney (2015) found a significant relation between narcissism and photograph editing among men and Dhir et al. (2016) found that younger females were

more likely to crop photographs and use filters than older women. However, narcissism and age both were not significantly related to photograph editing (95% CI [-0.06, 0.18] and [-0.02, 0.08], respectively) or the desire to obtain appearance feedback (95% CI [-0.32, 0.28] and [-0.18, 0.08], respectively; *p*s >.294). Thus, both variables were removed from the model.

The indirect effect of appearance-contingent worth on the extent to which women edit photos of themselves through the desire for appearance feedback was significant, b = 1.10, SE = 0.26, 95% CI [0.64, 1.68]. Thus, the desire for appearance feedback mediated the relation between appearance contingent self-worth and the extent to which women edit their photographs. The statistics for each portion of the mediation model are presented in Figure 11. As seen in this figure, higher levels of appearance contingent self-worth were associated with greater desire to obtain appearance feedback and in turn greater frequency of editing photographs of oneself. Global self-esteem did not moderate the *a* path of this model, as the Index of Moderated Mediation was not significant, Index = 0.03, SE = .02, 95% CI [-0.01, 0.09]. Additionally, the conditional indirect effect of appearance contingent self-worth on photo editing with desire for appearance feedback as a mediator did not differ whether self-esteem was assessed at one SD below the mean b = 0.89, SE = 0.27 95% CI [0.46, 1.52], at the mean b = 1.07, SE = 0.26 95% CI [0.62, 1.63], or at one SD above the mean b = 1.24, SE = 0.32 95% CI [0.70, 1.93].

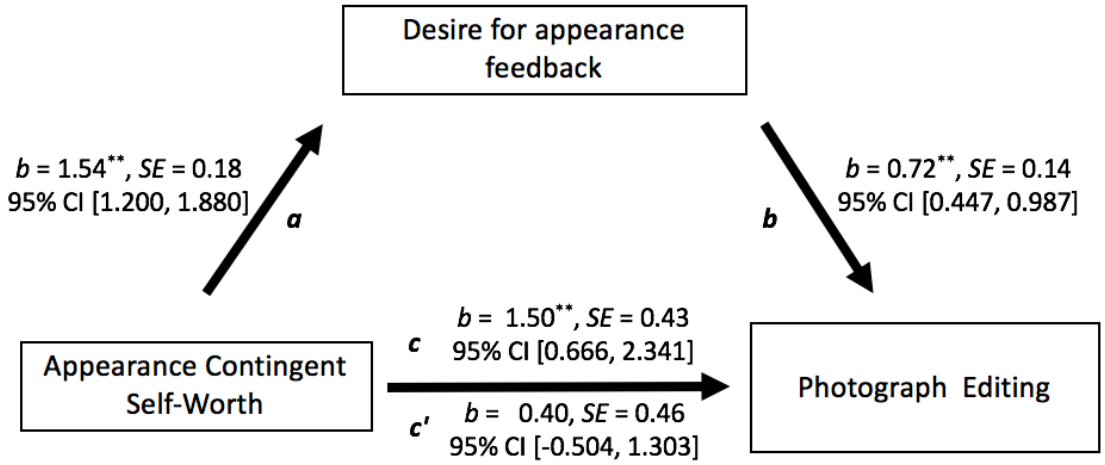

Figure 11. Mediation model assessing whether the desire for appearance feedback mediates the relation between appearance contingent self-worth and the extent to which women edit their photographs. $n = 297$

Study I Discussion

The aim of Study I was to better understand why women post selfies on social media with a focus on appearance contingent self-worth as an explanatory variable. It was hypothesized that women who base their self-worth on their appearance to a greater degree would have a stronger desire to receive positive feedback on their appearance in order to enhance or maintain their self-esteem and, therefore, would post more selfies on social media. Given that most women receive positive feedback on selfies (Porch, 2015) and the ease with which these photographs can be taken and enhanced though computer/mobile applications, posting selfies may be a simple means of obtaining affirmation of one's appearance and social value. In the present study, selfies were defined as self-taken photographs of only the self, differentiating them from self-taken photographs including others, referred to as usies (McLean et al., 2015). In addition, selfie posting was assessed in two ways: self-reported frequency of selfie posting and the proportion of photographs posted over the past two months that were selfies.

In contrast to Hypothesis 1, the relationship between appearance contingent self-worth and selfie posting, whether the latter was defined as the frequency of selfie posting or proportion of photographs posted that were selfies, was not statistically significant. Further, contrary to Hypothesis 2, these correlations were not stronger than correlations between the other contingencies of self-worth and selfie posting. In fact, the negative correlation between family-contingent self-worth and proportion of photographs posted that were selfies was statistically significant and stronger than the relation between the latter and appearance contingent self-worth. Thus, selfies comprise a smaller proportion of photographs posted by individuals for whom receiving love and affection from relatives is an important dimension of self-worth.

When this study was proposed, there was only one published study in which the relationship between appearance contingent self-worth and posting photographs of oneself on social media was assessed, and the results indicated a significant positive correlation between these variables (Stefanone et al., 2011). Although the results of Study I are in contrast to those of Stefanone et al. (2011), a more recent study conducted by Yue, Toh, and Stefanone (2017; $N = 334$, 42.8% female) also did not find a significant correlation between appearance contingent self-worth and selfie posting, with the latter operationalized as the self-reported number of selfies posted within the last week. It is of note that the term 'selfie' was not used in Stefanone et al.'s (2011) study, therefore the difference in results may be due to the fact that photos of oneself could have included photographs taken by others or usies.

Although there was no significant direct relationship between appearance contingent self-worth and selfie posting in the present study, there was a significant

indirect effect of appearance contingent self-worth on women's frequency of selfie posting through the desire to obtain positive appearance feedback, which was consistent with Hypothesis 3. Thus, it appears that women who base their self-worth on their appearance to a greater degree have a stronger desire for appearance feedback, and as a result post selfies online more frequently. This is consistent with the combined Sociometer and Contingencies of Self-Worth theories which suggest that individuals attempt to enhance or maintain their self-esteem through domains perceived to be important for social inclusion (MacDonald et al., 2003). It is also consistent with Crocker's (2002a) assertion that individuals who base their self-worth on external domains, such as appearance, require frequent and ongoing affirmation to maintain their self-esteem. Moreover, this finding provides support for the first portion of Perloff's (2014a) Transactional Model of Social Media and Body Image Concerns and suggests that this model could apply to selfie posting. As mentioned previously, the first portion of Perloff's (2014a) model draws from the Uses and Gratification approach (Katz et al., 1974), and suggests that women possessing certain individual factors, such as the importance of appearance for self-worth, use social media to seek gratification in the form of affirmation of their attractiveness.

The desire to obtain positive appearance feedback, however, did not mediate the relation between appearance contingent self-worth and the proportion of photographs posted in the past two months that were selfies. Thus, although women may post selfies more frequently in an attempt to receive positive appearance feedback, they do not necessarily post more selfies relative to other types of photographs. However, with the proportion of photographs posted over the past two months that were selfies and/or usies

as the outcome variable, there was a significant indirect effect of appearance contingent self-worth through the desire for appearance related feedback. Thus, women may also use usies as a means of obtaining affirmation of their appearance, by for example, posting usies in which they think they look good. Women also may be more inclined to post a combination of selfies and usies on social media to avoid potential stigma associated with selfie posting (Paris & Pietschnig, 2015), but this speculation requires further investigation.

Global trait self-esteem did not moderate the link between appearance contingent self-worth and the desire to obtain positive appearance feedback in any of the aforementioned mediation models. Thus, regardless of women's level of overall self-esteem, women higher in appearance contingent self-worth had a stronger desire for appearance feedback and in turn posted more selfies and/or usies. This is in contrast to Perloff's (2014a) assertion that women with low self-esteem may be more likely to seek affirmation of their attractiveness and, therefore, be more likely to use social media in an appearance-focused manner. However, the null findings seem logical within the context of the Contingencies of Self-Worth theory, which suggests that people make constant efforts to maintain their self-esteem if it is contingent on an external domain. Thus, even individuals with high self-esteem may need to obtain frequent confirmation of their worth when their high self-esteem is based on an external domain as is appearance.

Although the focus of Study I was on selfie-posting, an exploratory analysis found that there was a significant relationship between appearance contingent self-worth and the extent to which women edit photographs of themselves. Further, the desire to obtain positive appearance feedback mediated this relationship. This suggests that

editing photographs may be the truly appearance focused act, as posting selfies is only indirectly related to appearance contingent self-worth. Indeed, although women may have multiple motivations to post photographs of themselves on social media, with or without others, photograph editing appears more directly related to appearance and impression management efforts in the hopes of obtaining positive appearance feedback. It follows that women who base their self-worth on their appearance would be inclined to enhance photographs of themselves due to a desire for positive feedback, as they may perceive photograph editing as a socially acceptable means of increasing the probability of receiving likes or comments (Chua and Chang, 2016). This is consistent with Dumas, Maxwell-Smith, Davis, and Giulietti's (2017) conceptualization of photograph editing as a "like seeking behaviour" (p. 1), among other behaviours such as hashtagging images and purchasing followers.

Similar to the aforementioned moderated mediations, global self-esteem did not moderate the relationship between appearance contingent self-worth and the desire for positive appearance feedback and in turn the extent to which women edit photographs of themselves. This is consistent with Chae's (2017) finding that appearance dissatisfaction was not associated with selfie editing, and her conclusion that even individuals who are satisfied with their appearance "still edit their selfies to post perfect ones" (p.374).

Lastly, age and narcissism were tested as potential covariates in all of the mediation analyses given some findings that these variables were related to selfie posting and photograph editing. However, these variables were not found to be highly related to selfie posting or photograph editing and were often removed from the models. This was not surprising given inconsistencies within the published research. For example, although

Dhir et al. (2016) found that younger individuals edited their photographs more frequently, Yue et al., (2017) and Lowe-Calverley and Grieve (2018) found no relation between age and photograph editing, consistent with the present study. However, inconsistent findings with respect to the relationships between narcissism, age and selfie posting and photograph editing highlight the need for further replications and meta-analyses, especially given Open Science Collaboration's (2015) finding that although 97% of original published psychological studies yielded significant results, only 36% of these, in replication attempts, resulted in significant findings.

Limitations and Future Directions

The main limitation of the present study is its correlational design. A longitudinal study would be helpful to clarify whether appearance contingent self-worth truly increases the desire for affirmation of one's attractiveness, regardless of people's level of trait self-esteem, and in turn the frequency with which women post selfies and edit their photos in the hopes of obtaining positive appearance feedback. If a longitudinal study were to be conducted, it also would be interesting to assess whether individuals receive the feedback they desire and whether this further increases selfie editing and posting, as the Uses and Gratifications theory posits that the discrepancy between sought-gratifications and obtained gratifications predicts future media use (Palmgreen & Rayburn, 1979; Palmgreen et al., 1974). Smaller discrepancies between sought and obtained gratifications are associated with greater media use (Palmgreen & Rayburn, 1979), thus women who receive their desired feedback on selfies would be expected to post more selfies and to do so more frequently.

Additionally, both a limitation and a strength of the present research is its focus on selfies as defined as a self-taken photograph of only the self. Over 50% of participants in the present study reported that they do not typically distinguish between selfies and usies, suggesting that the concept of self-taken photographs of only the self may lack external validity. Further, only a few studies have distinguished between these two types of self-taken photographs (e.g., Dhir et al., 2016; McLean et al., 2015). Thus, it would be beneficial in future research to determine whether there are distinctions between selfies and usies in terms of how they are perceived, what their intended uses are, and the gratifications obtained from posting them. Further, if there are differences, it may be helpful for a new jargon to be created to define self-taken photos of only the self so that consumers of future research are not interpreting results based on their personal definitions of the term 'selfie.' Katz and Crocker (2015) interviewed academics and social media users and found that the "boundaries" of the definition of the term selfie varied (p. 1862). For example, some people felt that a photograph taken by the individual who posted it, could be considered a selfie, even if the individual was not in the photograph, as long as photographed content was of something that could be considered an "extension of the self," such as the individual's home or pet, Further, the exact definition of a selfie is not clearly ascertained in all published articles. Thus, the use of a specific definition and the fact that participants were presented with this definition prior to answering any questions about their selfie posting behaviours in this study also can be viewed as a strength as it helps provide clarity with respect to the findings.

Lastly, the findings with respect to photograph editing are limited. Since the time data was collected for this study, there has been a significant increase in the number of

publications about photograph editing, which affects our understanding of this behaviour (e.g., Chae, 2017, Dhir et al., 2016, Dumas et al., 2017, Lowe-Calverley & Grieve, 2018, Yue et al., 2017). For example, Yue et al. (2017) conducted an exploratory factor analysis and found that there are two types of photograph editing: *Composition editing*, which refers to changing overall elements of the photograph such as the brightness, and *Subject editing*, which refers to changing features of the individual within the selfie. Whether women higher in appearance contingent self-worth engage in more subject editing than composition editing could be explored in future research. In addition, it is possible that individuals high in appearance contingent self-worth also engage in other means of manipulating their appearance in photographs. For example, women often take multiple photographs of themselves before finding one worth posting and many Instagram celebrities have admitted to using specific body angle tricks to enhance their appearance in photographs. This suggests that the self-photography process itself may also be appearance focused and warrant further investigation.

CHAPTER 3

Study II: Purpose, Rationale, and Hypotheses

The aim of Study II was to determine how receiving positive feedback on selfies posted on Instagram, an image-based social media platform, relates to women's global trait self-esteem and appearance satisfaction over a two-month period. Although body satisfaction is more commonly researched with respect to social media use (e.g., Fardouly & Vartanian, 2015; Ridgway & Clayton, 2016), the focus was on general appearance satisfaction in this study given that people's bodies do not typically appear in selfies (Porch, 2015).

Recall that appearance is an external contingency of self-worth (Crocker, 2002a). Thus, people who base their self-worth on this domain have a reduced capacity to control their self-esteem intra-personally, as it is dependent on the judgements of others (Crocker, 2002a). Moreover, individuals with external contingencies of self-worth, such as appearance, tend to have less stable self-esteem and require more frequent validation within their respective domain of importance in order to maintain their sense of self-worth (Crocker, 2002). As such, compared to women low in appearance contingent self-worth, women high in this self-worth domain may be more motivated to obtain positive appearance-related feedback in order to maintain their self-esteem which, according to the Sociometer theory, is an indicator of social inclusion (Leary, 2001). One way that they may do this is by posting photographs of themselves on social media where there is a high likelihood that they will receive positive feedback in the form of likes and or positive appearance-related comments (Porch, 2015). Indeed, the results of Study I supported the hypothesis that the more women perceive appearance to be a key determinant of social inclusion (operationalized as higher scores on the appearance subscale of the Contingencies of Self-Worth Scale), the greater their desire for positive-appearance related feedback, and in turn the greater their frequency of selfie posting. Further, researchers have found that receiving positive feedback within a contingent domain results in higher self-esteem (e.g., Crocker et al., 2003).

A logical question that follows is: Does the positive feedback women receive in response to selfies posted on social media relate positively to their global self-esteem and appearance satisfaction? Although women in qualitative studies have stated that receiving likes and comments on their photographs helps them feel more attractive and more

confident, there is limited quantitative data to support these statements. According to the Sociometer theory, people have high trait self-esteem when they experience ongoing acceptance and inclusion from others (Leary, 1999). The combination of the Sociometer and Contingencies of Self-Worth theories suggests that people attribute their acceptance and inclusion to better performance in valued domains (MacDonald et al., 2003), such as appearance. That is, someone high in appearance contingent self-worth, may feel accepted by others because others find him/her attractive. Therefore, receiving ongoing positive feedback in the form of likes and comments on selfies posted on social media should result in greater trait self- esteem for women who base their self-worth on their appearance. Comments may provide explicit positive appearance-related feedback, and likes can have multiple meanings such as positive relational value and/or affirmation of one's appearance (Gao, 2016).

Although the discussion thus far has focused on women high in appearance contingent self-worth, it is of note that women generally tend to place high importance on their appearance (Crocker et al., 2003) given the current social climate. Thus, it is likely that receiving likes positively influences global trait self-esteem and appearance satisfaction among women in general. Indeed, qualitative studies that have not accounted for appearance contingent self-worth have found that girls and women generally feel more attractive (Chua & Chang, 2015) and confident (Porch, 2015) when they receive likes on their photographs. However, appearance contingent self-worth is likely to moderate this relationship, such that women higher in appearance contingent self-worth are more impacted by likes received on selfies than are women lower in appearance contingent self-worth.

There is no existing published quantitative research on the relation between receiving positive appearance-related comments on selfies posted on social media and women's self-esteem and appearance satisfaction. However, research on positive appearance-related feedback more generally reveals that it is positively associated with global trait self-esteem and negatively associated with body dissatisfaction (Herbozo & Thompson, 2006). Therefore, as with likes, positive feedback in the form of comments should positively influence the self-esteem and appearance satisfaction of women, especially those who place high importance on their appearance as they are more sensitive to feedback in this domain.

As mentioned previously, the impact of receiving ongoing selfie feedback over the course of two months on self-esteem and appearance satisfaction was assessed in Study II. Both the Contingencies of Self-Worth and Sociometer theories posit that an individual's level of trait self-esteem is the product of his or her experiences over time. Thus, outcome variables were measured at the trait level, rather than state.

Given the aforementioned considerations, the following were hypothesized:

H4: The average proportion of likes received on women's selfies will be positively related to higher self-esteem and appearance satisfaction.

H5: Appearance contingent self-worth will moderate the relations between average proportion of likes received on one hand, and trait self-esteem and appearance satisfaction on the other hand. Specifically, the positive relations between average proportion of likes and trait self-esteem and appearance satisfaction will be more pronounced among women who are high in appearance contingent self-worth than for

women who are low on this variable.

H6: The average proportion of positive-appearance related comments received on selfies posted on social media will be associated with higher trait self-esteem and appearance satisfaction.

H7: Appearance contingent self-worth will moderate the relationships between average proportion of positive appearance-related comments received and trait self-esteem and appearance satisfaction, such that the positive relationships between the average proportion of comments and trait self-esteem and appearance satisfaction will be more pronounced among women who are high versus low in appearance contingent self-worth.

In testing each of the aforementioned hypotheses, BMI and depressive symptoms were employed as covariates as they been negatively associated with both self-esteem (Chang, Jarry, & Kong, 2014) and appearance satisfaction (Chang, 2014), and have been tested as a covariate in previous research studies using these outcome variables (e.g., Boersma & Jarry, 2013; Chaker, Chang & Hakim-Larson, 2015; Homqvist, Lunde, & Frise'n, 2007).

Study II: Method

Participants

Participants were recruited via the University of Windsor's participant pool, posters and flyers distributed on campus, and electronic flyers distributed via e-mail to all major University of Windsor student clubs. Inclusion criteria were: (1) identifying as female, (2) having an Instagram account, public or private, (3) having posted at least one selfie (as defined in Study I; See Procedure section) on Instagram within the past two

months, and (4) reporting “rarely” or “never” deleting selfies posted on Instagram. The latter criterion was included to ensure that the content being coded was an accurate reflection of the amount of feedback participants received during the two-month period, as women may delete posted photographs for various reasons, such as the receipt of an insufficient number of likes.

In total, 158 individuals accessed the study link either through the participant pool or by e-mail after contacting the primary investigator to express interest in participating in the study as was indicated on the posters and flyers. Ninety-seven met the screening criteria and completed the survey. Of these participants, 95 were sent follow requests. One individual did not provide their Instagram account and indicated that this was because “It's just my private account for family and friends to view” and the other person was not sent a follow request due to an error on the part of the researcher. Of the 95 people who were sent follow requests, 97% accepted (n = 92). However, the likes and comments received on selfies during the two months prior to the completion of the questionnaires were only coded from 48 accounts. When the accounts were accessed, 41 profiles contained no posted selfies within the past two months, despite the account holders indicating that selfies had been posted during this time period. Thus, there was no content to code. In addition, three people were found to have public accounts despite reporting having private accounts before it was decided that both individuals with private and public accounts would be included in this study.[1] Thus, their accounts were not

[1] Initially, recruitment was restricted to individuals with private accounts. However, due to difficulties with recruitment (as described in Appendix N) and the finding that there was only one significant difference between women with public and private accounts, it was decided that both women with private and public accounts would be included in this study. The analysis for public versus private accounts is presented in the Results section

coded. All of the 48 women whose accounts were coded were considered to be valid responders, based on correctly responding to at least two out of the three validity questions included in this study (see Measures section). These women ranged in age from 18 to 27 years old (M = 20.44, SD = 2.12), and the majority were single (93.75%). With respect to racial/ethnic identity, 75% identified as Caucasian/European (n = 36), 10.42% as South Asian (n = 5), 8.33% as Arab (n = 4), 2.08% as African Canadian/Black (n = 1), 2.08% as Hispanic (n = 1), and 2.08% as East Asian (n = 1). In terms of level of education, all participants were undergraduate students; 29.17% were in their first year (n = 14), 18.75% were in their second year (n = 9), 25.00% were in their third year (n = 12), 14.58% (n = 7) were in their fourth year, and 12.50% had completed more than four years of university (n = 6).

Measures

Descriptors. Demographic information was obtained using a demographics questionnaire that contained questions about age, gender, marital status, ethnicity, and education (see Appendix C). Descriptive information about participants' social media use was obtained via the Selfie and Social Media Questionnaire as well as the Photo Manipulation Scale.

The Selfie and Social Media Questionnaire is a 35-item questionnaire, created for use in Study I. It assesses social media use and the frequency with which participants post selfies on social media and the proportion of their posted-photographs that are selfies (see Appendix G). Only the first few items about social media use were administered, as the

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of this study. See Appendix O for more information about changes to the inclusion criteria for Study II.

remainder of the questionnaire was created to measure the outcome variables in Study I (e.g., proportion of photographs posted that are selfies) and these were not variables of interest in the present study.

The Photo Manipulation Scale (McLean et al., 2015) is a 10-item measure of the extent to which people edit photographs of themselves (see Appendix D). Individuals respond to items such as "Edit or use apps to smooth skin" from 1(*Never*) to 5 (*Always*). A total score is obtained by summing all responses, and higher scores indicate more frequent photograph editing. The Photo Manipulation Scale has good internal consistency with a Cronbach's alpha of .85 and good four-week test re-test reliability of .74 (McLean et al., 2015). In the present study, the Photo Manipulation Scale had a Cronbach's alpha of .85.

Predictor variables.

Based on the information obtained through coding, the average proportion of likes received on selfies was computed using the following formula:

(Σ(# of likes on a selfie/# of followers))/# of selfies

The average proportion of positive appearance-related comments received on selfies was computed using the following formula:

(Σ(# of positive appearance-related comments on a selfie/# of followers))/# of selfies

Averages of proportions were used to account for the number of followers participants may have and the number of selfies they post.

Moderating variable. The appearance subscale of the Contingencies of Self-Worth scale, which was described in Study I along with information about internal

consistency, was used to assess appearance contingent self-worth (see Appendix E). The measure was administered in its entirety, but only the appearance subscale was analyzed. In the present study, the Cronbach's alpha for the appearance subscale was .77.

Criterion variables. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), which was described in Study I along with information about internal consistency, was used to assess global trait self-esteem (see Appendix H). The instructions were modified to reflect the time period when participants would have received the likes and comments to be coded, and directed participants to "think about the past two months and record the appropriate answer per item depending on whether [they] Strongly agree, Agree, Disagree or Strongly Disagree." In the present study, the Cronbach's alpha was .89.

The Body Esteem Scale for Adolescents and Adults (BESAA; Mendelson, Mendelson, & White, 2001) is a 23-item self-report measure assessing body and appearance satisfaction (See Appendix P). It consists of three subscales: appearance, weight, and attribution, but only the appearance subscale, which is comprised of 10 items, was analyzed. Individuals respond to items such as "I like what I see in the mirror" on a 5-point Likert-type scale form 0 (*Never*) to 4 (*Always*). Similar the RSES, the instructions were modified to reflect the two-month time period, and read "Think about the past two months, and indicate how often you agree with the following statements." The appearance subscale score is obtained by computing the mean of the relevant items and higher scores reflect more positive evaluations of one's appearance. The appearance subscale of the BESAA has been found to have excellent internal consistency with

Cronbach's alpha of .92 (Mendelson et al., 2001). In the present study, the Cronbach's alpha for the appearance subscale was .93.

Covariates. Participants self-reported their weight in pounds and height in feet and inches at the end of the study and this information was used to compute BMI using the formula weight (lb) / [height (in)]^2 x 703 (Centre for Disease Control, 2014).

The Beck Depression Inventory-II, which was described in Study I along with information about internal consistency, was used to assess depressive symptoms (See Appendix L). In the present study, the Cronbach's alpha for the BDI-II was .91.

Other measure.

The Brief Fear of Negative Evaluation-II[2] (BFNE-II; Carleton, McCreary, Norton, & Asmundson, 2006) is a 12-item measure assessing the fear of being evaluated negatively by others (see Appendix K). Individuals respond to items such as "I am afraid that other people will not approve of me" on a 5-point scale from 0 (*not at all characteristic of me*) to 4 (*extremely characteristic of me*). Items are summed to obtain a total score, and higher scores on the BFNE II reflect greater fear of negative evaluation. The BFNE-II has been found to have excellent internal consistency, with a Cronbach's alpha of .94 (Carleton et al., 2006). In the present study, the Cronbach's alpha for the BFNE-II was .97.

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[2] A measure of fear of negative evaluation was included in the study to determine if this was a variable on which individuals who were willing to permit a researcher to view their Instagram account differed from those who did not give permission. This analysis would only be conducted if there were similar number of individuals who completed the questionnaires that did or did not accept the follow request, therefore allowing for a meaningful t-test to be conducted.

Validity checks. An additional item was added to each of the BESAA, RSES and CSWS asking the participant to indicate a specific response in order to ensure participants were reading the items. For example, on the BESAA the validity check was "Please select 3, often."

Materials

Coding sheet. Each Instagram account was coded by the primary investigator and an undergraduate research assistant using the coding sheet in Appendix Q. There were two research assistants, both of whom were familiar with Instagram and blind to the hypotheses of this study, but each account was only coded by one of them. Coders recorded basic information such as number of followers. They also counted the number of images posted within the past two months, identified which images were selfies as defined in this study, recorded the number of likes received on each selfie, and recorded and coded the comments on the selfies. Research assistants were provided with the definition of a selfie that was provided to participants (see Figure 4 in Study I), and all three coders practiced identifying selfies by looking at strangers' public Instagram accounts together on the primary investigator's phone. Collages or albums containing selfies were considered selfies for the purposes of this study. Boomerangs or other videos were not coded as Instagram replaced likes with number of views on videos during the study.

Development of a coding scheme. To determine coding guidelines for positive appearance-based comments, the primary investigator along with the two undergraduate research assistants reviewed the comments on the selfies that were identified during the previously mentioned practise session. That is, comments on selfies found on public

Instagram accounts that did not belong to study participants were reviewed. In doing so, it became apparent that some comments were comprised entirely of *emojis*, "small images, symbols, or icons used in text fields in electronic communication…" (Merriam-Webster, 2018), and these comments were not always interpreted consistently by the three coders, nor could the receiver's interpretation of the comments be ascertained. For example, one coder interpreted the angel emoji as being indicative of a sweet or innocent personality whereas the other coders interpreted this emoji as indicating that the individual in the photograph looked like an angel. Thus, it was decided that comments comprised entirely of emojis would not be coded for the purposes of this study. In addition, some of the comments were written in languages other than English. Only comments written in English were coded.

Thus, although all comments were counted, only text based comments written in English or text based comments with emojis were coded for the purposes of this study. Coders were asked to rate each comment as being positive, neutral, or negative, and as being appearance-based or not appearance-based. Based on this, comments were then coded as 1 (*positive appearance-based comment*) or 0 (*not a positive appearance-based comment*). When coding text based comments, it was decided that appearance-based adjectives (e.g., pretty, beautiful) or other positive adjectives with mention of the way one looks (e.g., you look great!) or their clothing or a body part/facial feature (e.g., that dress is amazing on you!) would be considered positive appearance-based comments. Coders also were encouraged to use their knowledge of current slang to determine whether comments were positive and appearance-based. For example, the comment "biiih you looking like a lil snack (red heart emoji, kiss face emoji, red heart emoji)" was coded

as positive and appearance-based as the slang word ‘snack’ refers to someone who looks good. For text-based comments with emojis, the combination of text and emojis were used to determine whether the comment was positive and appearance based. For example, the comment “Dammnn (with a fire emoji)” was determined to be a positive appearance-based comment as all three coders interpreted this comment as meaning ‘damn you’re hot’ during the initial review of strangers’ selfies.

Practice coding. The primary investigator selected a new non-participant’s public profile that contained posted selfies and each coder independently coded this profile for further practice. Then, codes were discussed as a group to determine consensus for learning purposes.

Procedure

Students who registered in the Participant Pool were administered the screening questions (see Appendix R) which were imbedded among screening questions for all the studies that were simultaneously advertised on the pool. The advertisement for this study was visible only to eligible participants, as per their answers to the screening questions. After signing up for the study on the participant pool, a link to the study webpage was made available to participants. Once they accessed the web page, they were presented with the same verbal and visual definition of a selfie as in Study I (see Figure 4) and asked if they had posted at least one selfie within the past two months. Those who responded “yes” were presented with a consent form that indicated that they would receive 0.5 credits for completing the online questionnaires and allowing the researche team to follow their Instagram account and code its contents.

Individuals who were recruited from outside of the participant pool viewed a

study advertisement (see Appendix S) either in the form of a poster on campus, a flyer that was handed out by a member of the research team, or a pdf that was e-mailed to student club members. Interested individuals were instructed to e-mail the primary investigator who then provided a link that inquired about the inclusion criteria and whether the potential participant had posted a selfie within the last two months. Individuals who met the inclusion criteria were directed to a consent form which indicated that they would receive a five-dollar gift card for completing the questionnaires and allowing the research team to follow their Instagram account and code its contents.

Individuals who consented to participate in the present study first were administered the demographics questionnaire followed by the rest of the questionnaires in randomized order to minimize potential order effects. At the end, participants were asked to report their weight in pounds and height in feet and inches, and provide their Instagram username. They were informed that they would receive a follow request from @UWindsorResearch2017 and asked to accept it within four days. The primary investigator and a research assistant checked for completed surveys daily and sent out follow-requests. If a participant did not accept the request within two days, a reminder e-mail was sent.

Once participants accepted the follow request, the primary investigator and a research assistant coded the account retrospectively using the aforementioned coding sheet within 10 days (see Appendix Q). Accounts were coded prior to scoring the quantitative data to reduce any potential bias arising from the quantitative data (e.g., potentially being more likely to code comments as being positive and appearance-based on accounts held by individuals high in self-esteem or appearance satisfaction). Early in

the coding process, there was one occasion on which the primary investigator and research assistant did not count the same number of selfies. This lead to the discovery that without the most recent Instagram update, selfies posted as part of albums were not visible, therefore all coders installed the newest Instagram update. With the exception of this occurrence, there were no disagreements about identifying selfies posted on participants' accounts. There were discrepancies in the number of likes recorded, but this was to be expected, especially on more recent posts given that people can like posted photos on an ongoing basis and likes are updated in real time. The number of likes used in the analyses were taken from whichever coder coded the account first. In terms of identifying whether comments were positive and appearance-related, there was acceptable agreement between the primary investigator and each undergraduate research assistant as the Kappa statistics, which were 0.86 and 0.98, were above the cut-off of 0.67 (Krippendorf, 1980) and within the "almost perfect" range of 0.81 and 1.00 (Landis & Koch, 1977, p. 165). Kappa was used to compute inter-rater reliability as it accounts for "agreement that would be expected by chance" and is therefore preferable to reporting a percentage of agreement, which may overestimate agreement (Hallgren, 2012, p. 5). Disagreements were presented to the third coder or a member of the Studies in the Psychology of Appearance lab, and the final code was made based on their decision as it indicated a majority (i.e., two to one).

Ethical considerations

The methodology of obtaining access to participant's private social media accounts had never been employed at the University of Windsor, and the REB required justification for this protocol, aside from precedents (e.g., Barry et al., 2015; Mehdizadeh,

2010). A review of the literature indicated that this study's methodology constituted "non-intrusive web-based research" (Warrell & Jacobson, 2014, p. 25) and, therefore, was considered to be low-risk. The methodology was considered to be non-intrusive as there were no interactions with participants on social media aside from sending the initial follow request. That is, the researcher/research assistants did not comment or "like" any of the participant's photographs, nor were any photographs posted to the research account that could be liked or commented upon by participants. In addition, the participants were not asked to post selfies, rather their existing selfies were coded.

The REB noted that although the account holder would provide consent for their account to be coded, the primary investigator planned to code comments posted by individuals who did not provide consent. The primary investigator argued that these comments were made in a 'public' environment, and Instagram users are aware that any individual following their friend can view the comments posted on their friend's photographs. Given that comments are posted in a public setting without the expectation of privacy, it was determined that consent from commenters would not be required. However, to respect the privacy of these individuals, the usernames of commenters were not recorded.

Study II: Results

Overview of Data Analyses

All statistical analyses were performed using IBM SPSS Statistics (Version 25) for Mac. During data collection for Study II, data from Study I were analysed using t-tests to determine whether there were any significant differences between individuals with public and private Instagram accounts on relevant psychological variables and selfie

posting behaviour. This was done to determine whether it was appropriate to recruit individuals with public accounts in addition to women with private accounts. In terms of the data collected for this study (i.e., Study II), data first were checked for valid responding, as indicated above. Then, a missing data analysis was conducted and the assumptions of multiple regression analyses were assessed. Additionally, the data were checked for outliers as extreme cases can influence regression equations (Tabachnick & Fidell, 2007). Descriptive statistics were computed to describe the social media practices of the participants, and the hypotheses were assessed using multiple regression.

Private vs. Public accounts (using data from Study I)

Bootstrapped t-tests were conducted on the data obtained in Study I to determine whether there were significant differences between women with public and private Instagram accounts. Only the 257 women considered valid responders in Study I who knew whether their Instagram account was public or private were included in these analyses ($n_{private}$ = 169, n_{public} = 88). There were no significant differences between women with private and public Instagram accounts on any of the psychological variables measured, which included appearance contingent self-worth, global self-esteem, depressive symptoms, narcissistic personality traits, fear of negative evaluation, drive for thinness, body dissatisfaction, bulimic symptoms, and desire for positive appearance feedback (all *p*s > .197; see Table 7). In terms of photograph-based behaviours, women with public accounts did not differ from those with private accounts on the extent to which they edit photographs of themselves or frequency of selfie posting. However, women with public Instagram accounts were found to hashtag selfies more frequently than women with private accounts (see Table 7). The *n* for the latter two outcome

measures was lower as items inquiring about selfie posting were only administered to women who indicated that they had posted a selfie on Instagram as described in Study I ($n_{private}$ = 162, n_{public} = 84). Given that women with private and public Instagram accounts only differed significantly on one domain, it was decided that data from women with public Instagram accounts could be included along with women with private accounts, and the inclusion criteria of having a private Instagram account was removed during data collection.

Table 7
T-tests between women with private and public Instagram accounts

	Private Account	Public Account				Bootstrapped 95% Confidence Interval	
	Mean (*SD*)	Mean (*SD*)	*t*	df	Sig.	Lower	Upper
CSW-app	5.16 (0.93)	5.32 (0.89)	-1.26	255	.197	-0.378	0.078
RSES	19.73 (5.53)	18.95 (5.91)	1.04	255	.341	-0.736	2.261
BDI-II	14.49 (11.29)	15.30 (9.65)	-0.57	255	.540	-3.384	2.099
NPI-40	13.22 (6.19)	13.53 (6.90)	-0.37	255	.724	-2.022	1.366
BFNE	38.80 (10.61)	37.10 (11.60)	1.18	255	.221	-1.079	4.890
EDI-DT	23.70 (9.00)	23.36 (8.25)	0.30	255	.767	-1.764	2.464
EDI-BD	32.06 (9.95)	30.96 (9.40)	0.86	255	.418	-1.412	3.631
EDI-B	16.65 (6.59)	16.51 (6.65)	0.17	255	.871	-1.484	1.859
Feedback	9.85 (3.14)	9.80 (3.10)	0.14	255	.884	-0.727	0.835
PMS	21.21 (6.87)	20.26 (6.76)	1.05	255	.291	-0.817	2.762
Selfie-freq	1.97 (1.19)	2.05 (1.11)	-0.50	244	.613	-0.370	0.221
Selfie-hashtag	1.80 (0.96)	2.39 (1.26)	-4.10	244	.001	-0.904	-0.282

Note: CSW – App. = Contingencies of Self-worth Scale – Appearance subscale; RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory –II; NPI-40 = Narcissistic Personality Inventory – 40; BFNE-II – Brief Fear of Negative Evaluation – II; EDI – DT = Eating Disorder Inventory -2 – Drive for Thinness subscale; EDI – BD = Eating Disorder Inventory -2 – Body Dissatisfaction subscale; EDI – B = Eating Disorder Inventory -2 – Bulimia subscale; Feedback = modified Revised Excessive Reassurance Seeking Scale; PMS = Photo Manipulation Scale; Selfie - Freq. = Frequency of selfie posting; Selfie - hashtag. = Frequency of hashtagging selfies

Study II Preliminary Analyses

Missing data. A missing data analysis was conducted at the item level. Less than 0.17% of all potential values were missing, and the percentage of missing values for each item ranged from 0 - 2.1%. In addition, Little's MCAR test indicated that the data were missing completely at random, $\chi 2$ (1450) = 395.59, p = 1.00.

Item-level missing data were replaced using case mean substitution for all subscales/scales, consistent with Study I. As mentioned in Study I, this technique is suitable for data obtained through self-report measures, and is recommended for use with item, rather than variable level missing data (Fox-Wasylyshyn & El-Masri, 2005; Schlomer et al., 2010). Missing data for height and weight were replaced using expectation maximization, so that BMI could be computed and tested as a covariate.

Univariate outliers and normality. Data were checked for univariate outliers using z-scores exceeding |3.29| (Field, 2009), and normality was assessed using skewness, kurtosis, and the Shapiro-Wilks test, which is considered to be more accurate than the Komolgorov-Smirnov test (Field, 2009). Skewness and kurtosis were within the recommended ranges of +/- 3 and +/- 10, respectively for all variables (Kline, 2011). However, only the RSES (SW(48) = .97, p = .208), BFNE (SW(48) = .97, p = .195), and appearance subscale of the BESAA (SW(48) = .97, p = .202) were normally distributed.

Univariate outliers were reduced using Windsorization, in which outliers were replaced by values one unit higher/lower than the next most extreme score on that variable (Field, 2009; Tabachnik and Fidell, 2007), and the data were rechecked for normality. The appearance subscale of the Contingencies of Self-Worth Scale was normally distributed after Windsorization, (SW(48) = .97, p = .368), but the other non-

normally distributed variables still were so after reducing outliers based on Shapiro-Wilks tests (all *p*s < .007). Given that the skewness and kurtosis for all variables were within acceptable limits, the data were not transformed and all parametric analyses were instead bootstrapped as this strategy is helpful in reducing the impact of non-normal distributions (Tavakol & Wilcox, 2013).

Assumptions of multiple regression. The assumptions of multiple regression were checked for each analysis, as they included different variables. Only one multivariate outlier was identified based on a leverage value exceeding 0.38 (i.e., 3(k+1)/n), but the data from this individual was retained as she was not found to be an influential case based on Cook's distance (Field, 2009). Linearity and homoscedasticity were assessed by inspecting plots of the standardized residuals (ZRESID) against the standardized predicted values of the dependent variables (ZPRED). The dots did not appear to "funnel out" or curve, suggesting that both assumptions were met (Field, 2009, p. 247) for all analyses. Further, the dots appeared to be fairly evenly dispersed around zero (Field, 2009). To assess normality of errors, histograms and P-P plots of the standardized residuals were inspected. The dots on all of the P-P plots were fairly close to the line, and the histograms appeared to be normally distributed, indicating that this assumption was met. In addition, the VIFs and tolerances were within acceptable limits, of less than 10 (range = 1.04 - 1.31) and greater than 0.1 (range = 0.76 - 0.97), respectively (Field, 2009). The Durbin-Watson statistics were close to the suggested value of two for all analyses (range = 1.83 - 2.22). Thus, the assumptions of absence of multicollinearity and independence of errors were met.

Descriptive Information

Social media use. All of the participants in this study were Instagram users as this was part of the inclusion criteria. The 48 individuals whose Instagram accounts were coded reported using between two and seven social media platforms ($M = 4.17$, $SD = 0.93$). Aside from Instagram, the most commonly used were social media platforms were: Facebook, Snapchat, and Twitter, which were used by 93.75, 93.75, and 60.42 percent of the sample, respectively. The number of women who reported using each social media platform are displayed in Figure 12. Consistent with Study I, the number of Snapchat and Tumblr users were determined by assessing the number of individuals who listed it under the "other" option or answered the follow-up questions pertaining to Snapchat. The same pattern of results was seen when analyzing the data from all participants who completed the survey ($n = 97$).

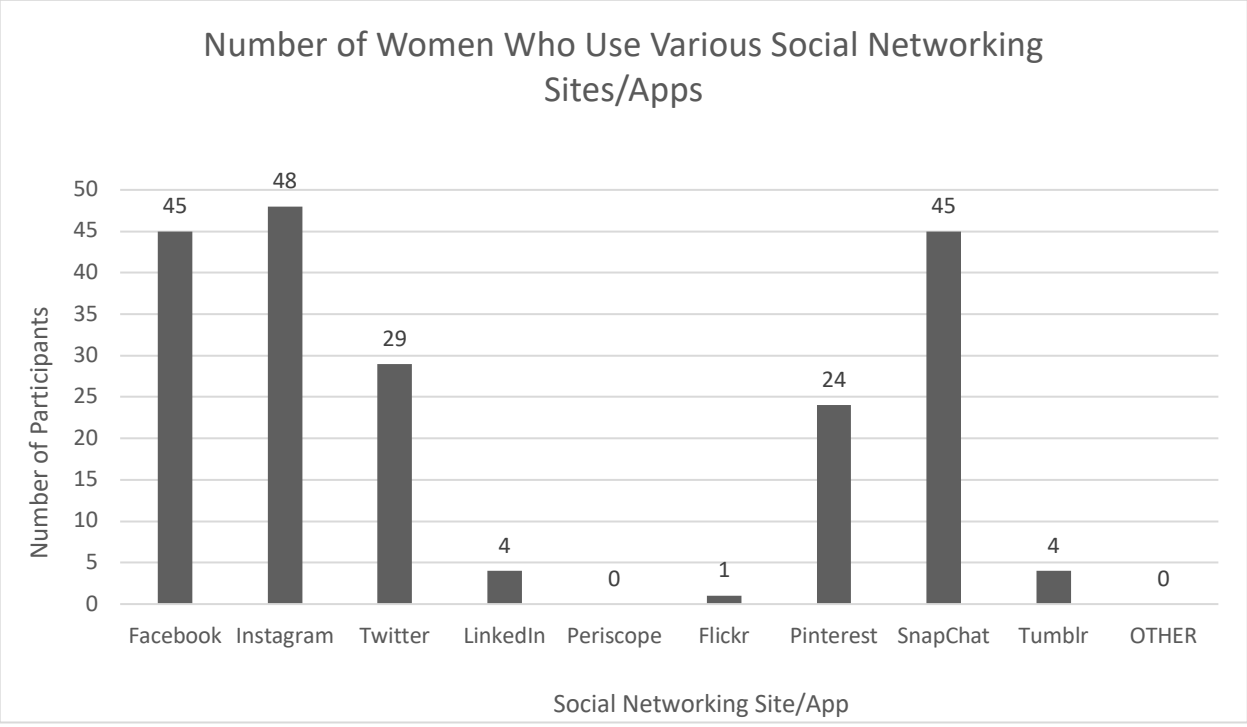

Figure 12. Number of women who use each social media platform ($n = 48$)

Participants responded to additional questions about their use of Facebook, Instagram, Snapchat and Twitter. Most participants knew the privacy settings for each of their social media accounts. Among the 48 women whose Instagram accounts were coded, the majority reported having private accounts on Facebook (80%), Instagram (77.08%) and Snapchat (71.11%), whereas public accounts were more common on Twitter (62.07%), such that only 34.48% of women had private Twitter accounts. Numerous Snapchat users were unaware of their privacy setting on that particular app (*n* = 42). The number of women with private, public, or unknown settings on Facebook, Instagram, Snapchat and Twitter are presented in Figure 13.

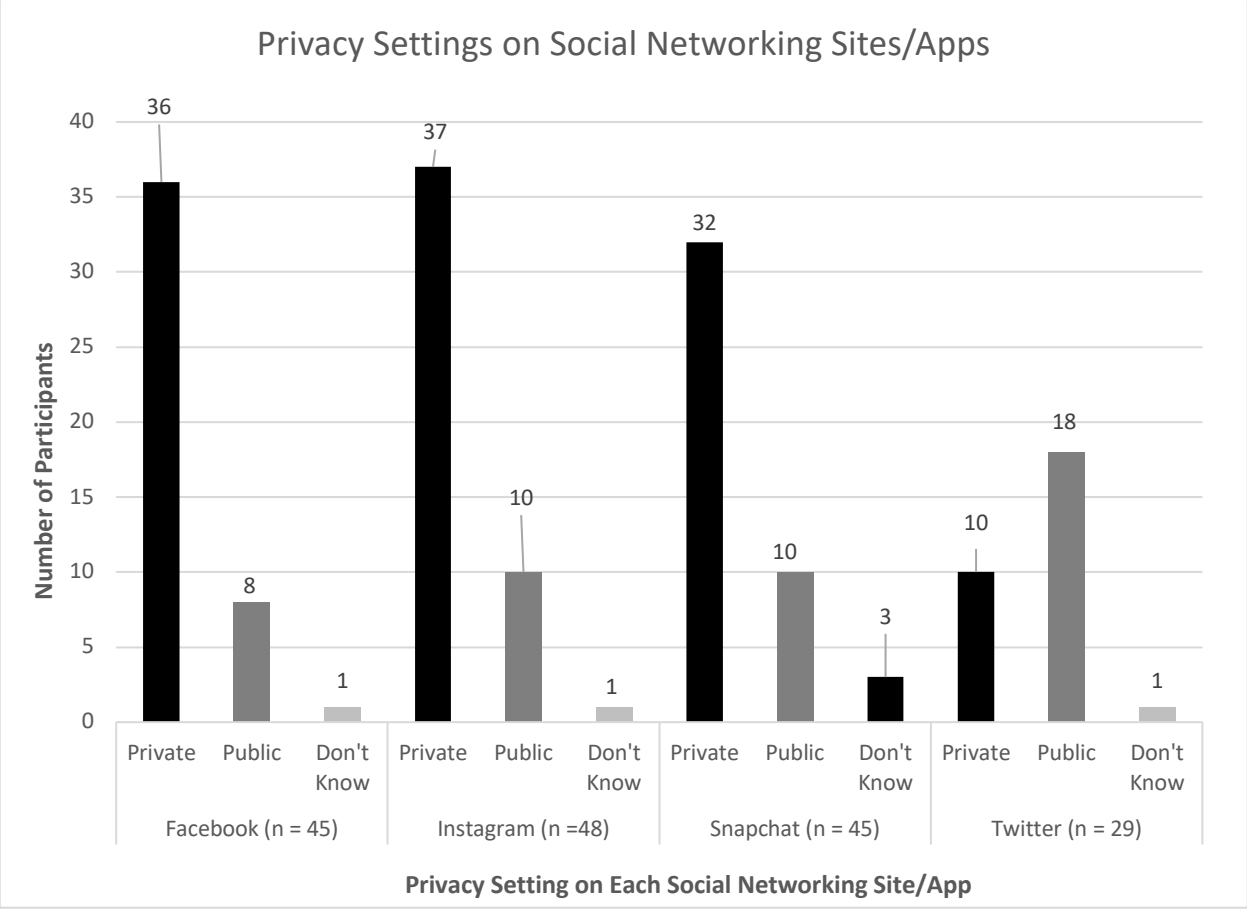

Figure 13. Privacy settings on each of the four most commonly used social media platforms. The *n*s vary as not all participants had accounts on each of the four platforms.

On average, participants reported spending 69.22 (*SD* = 68.80) minutes on Facebook, 89.13 (*SD* = 90.72) minutes on Instagram, 85.80 (*SD* = 81.48) minutes on Snapchat, and 51.00 (*SD* = 60.25) minutes on Twitter each day, with time spent on any of these ranging from 0-400 minutes per day. When combined, participants reported spending between 45 and 905 minutes on these four sites/apps (*M* = 266.11, *SD* = 200.28) daily. As mentioned in Study I, it seems that some participants may have reported the overall amount of time during which they intermittently accessed each social media platform, rather than time actually spent on each social media platform given the high numbers. Regardless, the total time spent on social media overall each day may be even greater given that participants were only asked to report how much time they spent on each of the four specific social media platforms. Participants had between 41-1213 friends on Facebook (*M* = 492.11, *SD* = 308.68), and participants' followers as well as the number of individuals they followed on Instagram, Snapchat, and Twitter are reported in Table 8.

Table 8
Participants' number of followers and people being followed on social media platforms

Social media platforms	*n*	Number of followers		Number of people being followed	
		Range	Mean (*SD*)	Range	Mean (SD)
Instagram	48	4 - 1367	499.19 (347.38)	49 - 1121	446.37 (259.93)
Snapchat	45	20 - 500	105.82 (104.22)	20 - 500	99.29 (85.61)
Twitter	29	2 - 4900	520.69 (906.17)	7 - 3600	428.00 (683.88)

Photograph related behaviours. Based on information obtained from coding 48 participants' Instagram accounts, each of whom had to have posted at least one selfie, the

women had posted 1 – 81 photos on Instagram within the past two months (*M* = 11.75; *SD* = 15.51) among which 1-17 were selfies (*M* = 2.58; *SD* = 2.85). All posted selfies received likes (i.e., no selfies received zero likes), but not all selfies received comments. Over the two months, participants received a total of 0 – 46 comments on their posted selfies (*M* = 10.02; *SD* = 12.48), and 0 – 22 of the English text-based comments were determined to be positive, appearance-related comments (*M* = 4.48; *SD* = 5.52).

With respect to photograph editing, the average score on the Photo Manipulation scale was 19.68 (*SD* = 6.77; maximum score = 50). The mean score and frequency of response options selected for each item were assessed to determine which editing strategies were used most often. The use of a filter to change the overall appearance of the photo was the most commonly used strategy (*M* = 3.71, *SD* = 0.97) such that 62.50% of participants reported applying filters "often" or "always." The next most commonly used approach was altering the light/darkness of the photo (*M* = 3.44, *SD* = 1.15; 50.00% selected "often" or "always"). The majority of participants (79.17%) indicated that they "never" use photograph editing strategies that involve altering their size or a part of their body.

Study II variables. Descriptive information and zero-order correlations for all Study II variables are presented in Table 9. As mentioned previously, the BFNE was included to determine whether there was a difference between those who were and were not willing to accept a follow request in the event that significant proportion of participants declined the follow request. However, this analysis was not conducted given that only three individuals did not accept the follow request.

Table 9.
Descriptive statistics and zero-order correlation for Study II variables (*n* = 48)

	Scale Range	Mean (SD)	2	3	4	5	6	7	8	9
1. BMI		24.91 (6.08)	.31*	-.37**	-.15	-.05	-.54**	-.50**	.33*	0.11
2. BDI-II	0 to 63	13.22 (9.31)		-.09	.10	.26	-.65**	-.51**	.47**	0.24
3. Prop-likes	0 to 1	0.27 (0.12)			.60**	.00	.20	0.10	.04	-.02
4. Prop-com	0 to 1	0.00 (0.01)				.06	.11	.01	.09	.02
5. CSW-app	1 to 7	4.95 (0.95)					-.37*	-.61**	.61**	.08
6. RSES	0 to 30	20.48 (5.60)						.73**	-.65**	-0.13
7. BESAA-a	0 to 4	2.20 (0.86)							-.81**	-.19
8. BFNE	12 to 60	36.12 (13.15)								.23
9. PMS	10 to 50	19.68 (6.77)								

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Prop-likes = average proportion of number of likes received on posted selfies; Prop-com = average proportion of number of positive appearance-based comments received on posted selfies; CSW-app = Contingencies of Self-Worth – Appearance Subscale; RSES = Rosenberg Self-esteem Scale; BESAA-a = Body Esteem Scale for Adolescents and Adults – Appearance Subscale; BFNE = Brief Fear of Negative Evaluation; PMS = Photo Manipulation Scale

Main Analyses

Hypothesis 4 and 5

Hypothesis 4 stated that greater average proportion of likes received on selfies would be related to higher self-esteem and appearance satisfaction. Hypothesis 5 was that appearance contingent self-worth would moderate the relations between average proportion of likes received and self-esteem and appearance satisfaction, such that the positive relations between average proportion of likes and trait self-esteem and appearance satisfaction would be larger for women who are high in appearance contingent self-worth than for those who are low. To test Hypotheses 4 and 5, two moderated multiple regressions were conducted, one for each of the outcome measures. Predictor variables were centered prior to being entered into the regressions (Field, 2009).

The potential covariates of BMI and depressive symptoms were entered into Block 1, and only retained if they significantly contributed to the model. First order effects were entered into Block 2. This included the average proportion of likes received on selfies and appearance contingent self-worth. The interaction term (appearance contingent self-worth*average proportion of likes received on selfies) was entered in Block 3.

Appearance satisfaction. Step 1 of the model, which included BMI and depressive symptoms, was significant, $F(2, 45) = 14.29$, $p < .001$ and accounted for 38.85% of the variance. Both BMI and depressive symptoms significantly contributed to the model and, therefore, were retained as covariates. Adding the average proportion of likes received on selfies and appearance contingent self-worth in Step 2 significantly improved the prediction of appearance satisfaction, $F_{change}(2, 43) = 22.98$, $p < .001$, and accounted for an additional 31.60% of the variance. Appearance contingent self-worth significantly contributed to the model. However, in contrast to Hypothesis 4, the average proportion of likes received on selfies did not, $\beta = -0.10$, $t(43) = -1.13$, $p = .326$, 95% CI [-2.09, 0.86]. Additionally, adding the interaction term in Step 3 did not improve the prediction of appearance satisfaction, $F_{change}(1, 42) = 0.71$, $p = .403$, nor did it significantly contribute to the model. Thus, Hypothesis 5, as it pertained to appearance satisfaction, was not confirmed. Statistics for the final model are presented in Table 10.

Table 10
Regression assessing Hypotheses 4 and 5 with appearance satisfaction as the outcome variable (n = 48)

Step	R	R^2	Variables entered	b	SE b	β	t	sig	Bootstrapped 95% CI Lower	Bootstrapped 95% CI Upper
1	.62	.39	(Constant)	2.20	0.10		22.30	.001	2.008	2.403
			BMI	-0.05	0.02	-0.37	-3.04	.005	-0.091	-0.021
			BDI-II	-0.04	0.01	-0.40	-3.23	.001	-0.057	-0.016
2	.84	.70	(Constant)	2.20	0.07		31.36	.001	2.053	2.338
			BMI	-0.07	0.01	-0.49	-5.22	.001	-0.097	-0.041
			BDI-II	-0.02	0.01	-0.22	-2.39	.053	-0.039	-0.002
			Avg. Prop. Likes	-0.70	0.63	-0.10	-1.13	.326	-2.092	0.862
			CSW-app	-0.53	0.08	-0.58	-6.72	.001	-0.643	-0.384
3	.84	.71	(Constant)	2.20	0.07		31.25	.001	2.051	2.332
			BMI	-0.07	0.01	-0.50	-5.26	.001	-0.098	-0.041
			BDI-II	-0.02	0.01	-0.22	-2.40	.061	-0.040	-0.002
			Avg. Prop. Likes	-0.70	0.63	-0.10	-1.12	.326	-2.110	0.794
			CSW-app	-0.52	0.08	-0.57	-6.49	.001	-0.637	-0.385
			CSW-app X Avg. Prop. Likes	-0.71	0.84	-0.07	-0.84	.341	-2.108	0.940

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Avg. Prop. Likes = Average proportion of likes received on selfies over 2 months; CSW-app = Contingencies of Self-Worth – Appearance Subscale; CSW-app x Avg. Prop. Likes = interaction between condition and average proportion of likes received on selfies over 2 months

Global self-esteem. Step 1 of the model, which included BMI and depressive symptoms, was significant, $F(2, 45) = 27.22$, $p < .001$ and accounted for 54.75% of the variance. Both BMI and depressive symptoms significantly contributed to the model and, therefore, were retained as covariates. Adding the average proportion of likes received on selfies and appearance contingent self-worth in Step 2 significantly improved the prediction of global self-esteem, $F_{change}(2, 43) = 3.80$, $p = .030$ and accounted for an

additional 6.80% of the variance. Appearance contingent self-worth significantly contributed to the model. However, in contrast to Hypothesis 4, the average proportion of likes received on selfies did not significantly contributed to the model, β = 0.004, $t(43)$ = 0.04, p =.966, 95% CI [-9.19, 9.59]. Adding the interaction term in Step 3 significantly improved the prediction of global self-esteem, $F_{change}(1, 42) = 4.83$, p =.034. Statistics for the final model are presented in Table 11.

Based on the 95% bootstrapped confidence interval, the interaction did not significantly contribute to the model, but the p value was less than .05, β = -0.20, $t(42)$ = -2.20, p =.044, 95% CI [-23.39, 2.70]. Thus, simple slopes (Aiken & West, 1991) at high (i.e., one standard deviation above the mean) and at low (i.e., one standard deviation below the mean) levels of appearance contingent self-worth were analysed to further assess Hypothesis 5, as it pertained to self-esteem. The simple slope was not significant (i.e., statistically significant from zero) at high levels of appearance contingent self-worth, β = -0.03, $t(42)$ = -0.30, p = .768, 95% CI [-9.49, 8.32], nor was it significant at low levels of appearance contingent self-worth, β = 0.04, $t(42)$ = 0.42, p = .652, 95% CI [-6.31, 10.04]. Thus, the impact of the average proportion of likes received on selfies on self-esteem was not significant regardless of women's level of appearance contingent self-worth, and Hypothesis 5 was not supported. Figure 14 depicts a graph of the simple slopes created using http://www.jeremydawson.co.uk/slopes.htm.

Post-hoc power analyses were conducted to clarify the interaction results, as there was a discrepancy between the confidence interval and p value and analyses were conducted on data obtained from only 48 individuals. Based on the effect size, sample size, and number of variables for this analysis, power was at 0.23, which is far below the

recommended power level of 0.8 (Field, 2009). Thus, there was only a 23% chance of detecting a significant interaction if it truly existed (Field, 2009). Moreover, for the simple slopes analysis at high and low levels of appearance contingent self-worth power was at 0.09 and 0.11 power, respectively. Thus, the null findings could be indicative of Type 2 errors.

Table 11
Regression assessing Hypotheses 4 and 5 with global self-esteem as the outcome variable (n = 48)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.74	.55	(Constant)	20.48	0.56		36.88	.001	19.419	21.570
			BMI	-0.34	0.10	-0.37	-3.52	.001	-0.578	-0.195
			BDI-II	-0.32	0.06	-0.53	-5.06	.001	-0.434	-0.175
2	.79	.62	(Constant)	20.48	0.52		39.11	.001	19.502	21.520
			BMI	-0.38	0.10	-0.41	-3.79	.003	-0.602	-0.195
			BDI-II	-0.27	0.06	-0.45	-4.35	.001	-0.405	-0.138
			Avg. Prop. Likes	0.20	4.66	0.00	0.04	.976	-9.882	10.110
			CSW-app	-1.61	0.59	-0.27	-2.75	.035	-2.870	0.046
3	.81	.66	(Constant)	20.48	0.50		40.81	.001	19.483	21.429
			BMI	-0.39	0.10	-0.43	-4.13	.001	-0.584	-0.198
			BDI-II	-0.27	0.06	-0.46	-4.58	.001	-0.400	-0.149
			Avg. Prop. Likes	0.27	4.46	0.01	0.06	.965	-7.766	9.613
			CSW-app	-1.43	0.57	-0.24	-2.51	.031	-2.667	-0.082
			CSW-app X Avg. Prop. Likes	-13.14	5.98	-0.20	-2.20	.044	-23.393	2.698

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Avg. Prop. Likes = Average proportion of likes received on selfies over 2 months; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and average proportion of likes received on selfies over 2 months

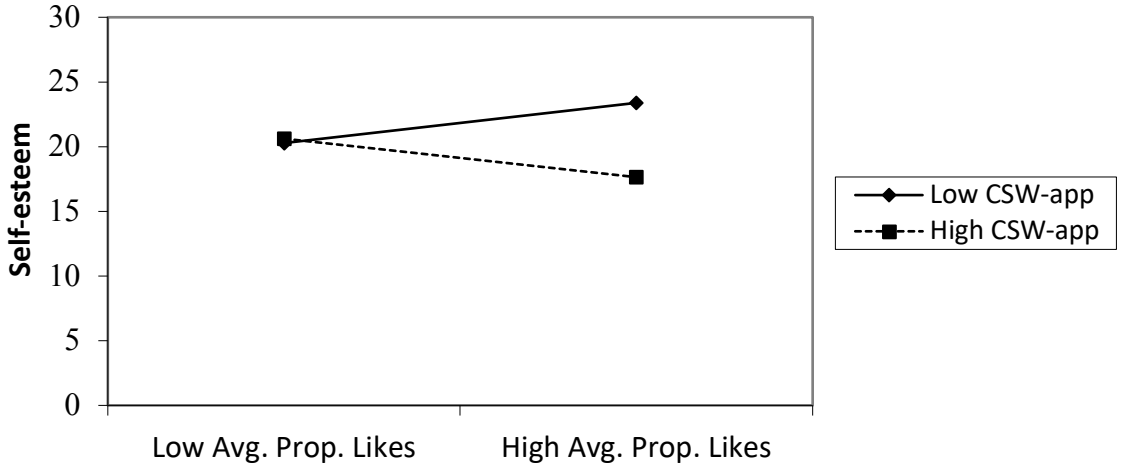

Figure 14. Simple slopes at one standard deviation above and below the mean of appearance contingent self-worth

Hypothesis 6 and 7

Hypothesis 6 stated that a greater average proportion of positive appearance-related comments on selfies would be associated with higher self-esteem and appearance satisfaction. Hypothesis 7 was that appearance contingent self-worth would moderate the relationships between the average proportion of positive appearance-related comments received and self-esteem and appearance satisfaction, such that the positive relationships between the average proportion of comments and trait self-esteem and appearance satisfaction would be larger among women who are high versus low in appearance contingent self-worth. Similar to Hypotheses 4 and 5, Hypotheses 6 and 7 were tested with two moderated multiple regressions, one for each of the outcome measures.

Appearance satisfaction. Step 1 of the model with BMI and depressive symptoms was significant, $F(2, 45) = 14.29$, $p < .001$ and accounted for 38.85% of the variance. Both BMI and depressive symptoms significantly contributed to the model and, therefore, were retained as covariates. Adding the average proportion of positive

appearance-related comments received on selfies and appearance contingent self-worth in Step 2 significantly improved the prediction of appearance satisfaction, $F_{change}(2, 43) = 21.72$, $p < .001$ and accounted for an additional 30.73% of the variance. Appearance contingent self-worth significantly contributed to the model. However, in contrast to Hypothesis 6, the average proportion of positive appearance-related comments received on selfies did not significantly contributed to the model, $\beta = -0.01$, $t(43) = -0.09$, $p = .925$, 95% CI [-25.23, 30.03]. Additionally, adding the interaction term in Step 3 did not improve prediction of appearance satisfaction, $F_{change}(1, 42) = 0.03$, $p = .871$, nor did it significantly contribute to the model. Thus, Hypothesis 7, as it pertained to appearance satisfaction, was not confirmed. Statistics for the final model are presented in Table 12.

Table 12
Regression assessing Hypotheses 6 and 7 with appearance satisfaction as the outcome variable (n = 48)

Step	R	R^2	Variables entered	b	SE b	β	t	sig	Bootstrapped 95% CI	
									Lower	Upper
1	.62	.39	(Constant)	2.20	0.10		22.30	.001	2.008	2.396
			BMI	-0.05	0.02	-0.37	-3.04	.004	-0.089	-0.022
			BDI-II	-0.04	0.01	-0.40	-3.23	.002	-0.056	-0.016
2	.83	.70	(Constant)	2.20	0.07		30.91	.001	2.056	2.352
			BMI	-0.06	0.01	-0.46	-5.02	.001	-0.093	-0.038
			BDI-II	-0.02	0.01	-0.22	-2.36	.042	-0.040	-0.001
			Avg. Prop. Likes	-1.07	12.51	-0.01	-0.09	.925	-25.226	30.026
			CSW-app	-0.52	0.08	-0.58	-6.59	.001	-0.654	-0.379
3	.83	.70	(Constant)	2.20	0.07		30.50	.001	2.052	2.362
			BMI	-0.06	0.01	-0.46	-4.88	.001	-0.095	-0.039
			BDI-II	-0.02	0.01	-0.22	-2.34	.045	-0.041	-0.002
			Avg. Prop. App Comments	-0.93	12.68	-0.01	-0.07	.946	-25.184	36.133
			CSW-app	-0.52	0.08	-0.58	-6.46	.001	-0.659	-0.358
			CSW-app X Avg. Prop. App Comments	-2.58	15.83	-0.01	-0.16	.858	-39.773	26.739

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Avg. Prop. App Comments = Average proportion of positive appearance-based comments received on selfies over 2 months; CSW-app = Contingencies of Self-Worth – Appearance Subscale; CSW-app X Avg. Prop. App Comments = interaction between appearance contingent self-worth and average proportion of positive appearance-based comments received on selfies over 2 months

Global self-esteem. Step 1 of the model with BMI and depressive symptoms was significant, $F(2, 45) = 27.22$, $p < .001$ and accounted for 54.75% of the variance. Both BMI and depressive symptoms significantly contributed to the model and therefore were retained as covariates. Adding the average proportion of positive appearance-based

comments received on selfies and appearance contingent self-worth in Step 2 significantly improved the prediction of global self-esteem, $F_{change}(2, 43) = 4.70$, $p = .014$ and accounted for an additional 8.11% of the variance. Appearance contingent self-worth significantly contributed to the model. However, in contrast to Hypothesis 6, the average proportion of positive appearance-based comments received on selfies did not significantly contribute to the model, $\beta = -0.12$, $t(43) = 1.24$, $p = .189$, 95% CI [-47.56, 306.78]. Additionally, adding the interaction term in Step 3 did not improve prediction of appearance satisfaction, $F_{change}(1, 42) = 0.003$, $p = .956$, nor did it significantly contribute to the model. Thus, Hypothesis 7, as it pertained to global self-esteem, was not confirmed. Statistics for the final model are presented in Table 13.

Table 13
Regression assessing Hypotheses 6 and 7 with global self-esteem as the outcome variable (n = 48)

Step	R	R^2	Variables entered	b	SE b	β	t	sig	Bootstrapped 95% CI	
									Lower	Upper
1	.74	.55	(Constant)	20.48	0.56		36.88	.001	19.421	21.464
			BMI	-0.34	0.10	-0.37	-3.52	.002	-0.563	-0.165
			BDI-II	-0.32	0.06	-0.53	-5.06	.001	-0.442	-0.176
2	.79	.63	(Constant)	20.48	0.51		39.80	.001	19.522	21.401
			BMI	-0.36	0.09	-0.39	-3.85	.002	-0.548	-0.170
			BDI-II	-0.28	0.06	-0.47	-4.56	.003	-0.414	-0.152
			Avg. Prop. Likes	111.65	90.27	0.12	1.24	.189	-47.560	306.779
			CSW-app	-1.62	0.57	-0.27	-2.81	.030	-2.859	-0.074
3	.79	.63	(Constant)	20.48	0.52		39.24	.001	19.510	21.489
			BMI	-0.36	0.10	-0.39	-3.71	.002	-0.558	-0.162
			BDI-II	-0.28	0.06	-0.47	-4.50	.003	-0.420	-0.151
			Avg. Prop. App Comments	111.31	91.54	0.12	1.22	.218	-72.152	354.696
			CSW-app	-1.62	0.58	-0.27	-2.77	.041	-3.012	-0.057
			CSW-app X Avg. Prop. App Comments	6.28	114.23	0.01	0.05	.963	-325.960	240.315

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Avg. Prop. App Comments = Average proportion of positive appearance-based comments received on selfies over 2 months; CSW-app = Contingencies of Self-Worth – Appearance Subscale; CSW-app X Avg. Prop. App Comments = interaction between appearance contingent self-worth and average proportion of positive appearance-based comments received on selfies over 2 months

Supplementary Analysis

Numerous participants who allowed the researchers to access their Instagram account, did not have any selfies posted. Twelve of these participants were contacted, and 10 individuals responded to the e-mail. Based on their responses, two individuals thought

a selfie referred to any photo of themselves and three participants stated that they thought they had posted a selfie within the past two months, but did not check their accounts to verify before responding. The remaining five individuals indicated that they had posted selfies on Instagram within the specified time frame, but had since deleted them. For example, one participant wrote "I did not realize that the selfies I thought I had on my account within two months were not present, and that I had actually deleted them. …. I deleted most photos due to my personal insecurities and or creating a certain aesthetic…"

T-tests were conducted between the 48 individuals whose Instagram accounts were coded and the 41 individuals whose Instagram accounts were not coded due to the absence of selfies on the study variables. This was done to determine whether there were significant differences between the two groups and help in determining to whom the findings of this study could be generalized. There were no significant differences between the two group on any of the study variables (all *p*s >.330). Statistics for these analyses are presented in Appendix T.

Study II Discussion

The aim of Study II was to determine whether likes and positive appearance comments received on selfies posted on Instagram relate to women's self-esteem and appearance satisfaction and if this is impacted by appearance contingent self-worth. Women with Instagram accounts who self-reported "never" or "rarely" deleting selfies posted on Instagram and who had posted at least one selfie within the past two months were asked to complete online questionnaires and permit researchers to code their Instagram account. Once accounts were accessed, researchers recorded the number of likes and comments received on each posted selfie and then coded whether or not

comments were positive and appearance-related. Only 48 accounts were coded as the accounts of 41 women revealed that no selfies from the past two months. Fifty percent of the women who responded to a follow-up e-mail inquiring about the lack of selfies on their account indicated that they had deleted previously posted selfies, suggesting that the screening item about frequency of selfie deletion was not effective.

It was hypothesized that the average proportion of likes and positive appearance comments received on selfies over two months would be positively associated with women's appearance satisfaction and global self-esteem during that time period, and that this relationship would be more pronounced among women higher in appearance contingent self-worth. After controlling for BMI and depressive symptoms, both of which are often significantly correlated with appearance satisfaction, there were non-significant relationships between the average proportion of likes and comments received on selfies and appearance satisfaction. Further, appearance contingent self-worth did not moderate the impact of average proportion of received likes or comments on appearance satisfaction. When interpreting these results, it is important to recall that on average the women in this study only posted 2.58 selfies over the two months during which their accounts were retrospectively coded. Although this is fairly consistent with the findings of Study I, it is much lower than previous research indicating that women post approximately one selfie per week (e.g., Porch, 2015) and means that there were only two to three occasions during the two-month span on which the average participant received positive appearance feedback, either in the form of likes or positive appearance-related comments, on posted selfies. This low frequency of positive appearance feedback may not have been sufficient to impact appearance satisfaction. Therefore, rather than

conclude that the amount of likes and positive appearance-related comments received on selfies does not impact appearance satisfaction, the results of the present study indicate that regardless of women's level of appearance contingent self-worth, the average proportion of likes and positive appearance-related comments received on selfies does not relate to women's appearance satisfaction, when they post only a few selfies over an extended period of time. The low frequency of selfie posting reported and observed in Studies I and II, respectively, relative to past research, may be due to the restrictive definition of selfie used in this research. Alternatively, it may be indicative of a decline in the popularity of selfie posting. For example, Wang, Wang, Liu, Xie, Wang, and Lei (2018) published a recent article in which data were collected from female college students. The mean frequency of selfie posting reported in this article was only 1.86 on a scale from 1 (*very infrequently*) to 8 (*several times a day*).

The main effects of average proportion of received likes and appearance comments on global self-esteem also were non-significant while controlling for BMI and depressive symptoms. However, there was a potentially significant interaction between appearance contingent self-worth and the average proportion of likes received on global self-esteem. The bootstrapped confidence interval for the interaction term contained zero and did not indicate significance, but a *p* value of .044 was indicated. A-priori testing indicated that at least 92 individuals would be necessary to detect an effect size, if it were to be of medium size, with 0.8 power. Analyses were conducted with just over half this number, and post-hoc analyses conducted specifically on the interaction findings for self-esteem confirmed that there was indeed very low power. Given that a *p* value of .044 emerged under these circumstances, it seems that this interaction between the average

proportion of received likes and appearance contingent self-worth on global self-esteem may be meaningful. That is, the impact of average proportion of received likes on self-esteem may depend on women's level of appearance contingent self-worth. Visual inspection of the simple slopes suggests that among women lower in appearance contingent self-worth, those who received likes on their selfies from a higher proportion of their followers reported slightly higher trait self-esteem than those who received likes from a lower proportion of their followers. Conversely, women higher in appearance contingent self-worth who received likes from a higher proportion of their followers reported slightly lower trait self-esteem than women who received likes from a lower proportion.

This pattern of results is contrary to Hypothesis 5, which indicated that positive relationships were expected between the average proportion of received likes on selfies and trait self-esteem, and that this relationship would be more pronounced among women who are higher in appearance contingent self-worth than for women who are lower on this variable. Thus, based on the results of this study, it is possible that receiving likes on posted selfies from higher proportions of one's followers may actually be associated with higher trait self-esteem among women lower in appearance contingent self-worth, than among women higher on this construct. Women lower in appearance contingent self-worth do not rely as heavily on appearance for their self-worth. Thus, these women likely were able to enhance/maintain their self-esteem through other domains of importance throughout the two-month period. The receipt of a higher average proportion of likes on posted selfies during this time may have, therefore, had an additive effect and helped to further boost their global trait self-esteem given that appearance tends to be at least

somewhat important for most women, whereas the receipt of a higher average proportion of received likes did not have as positive an effect on the self-esteem of women higher in appearance contingent self-worth. The self-esteem of women higher in appearance contingent self-worth may not be raised by receiving likes on their selfies from a higher proportion of their followers, as they may not only need more likes, but also need to receive likes on a more frequent basis in order to enhance their self-esteem. People who place their self-worth on an external domain, such as appearance, tend to require more frequent and ongoing feedback to maintain their self-worth. As mentioned previously, the frequency of selfie posting, and therefore frequency of receiving appearance feedback, was quite low in this study, and may not have been sufficient to raise the self-esteem of women higher in appearance contingent self-worth.

However, conclusions about the nature of the interaction cannot be made based on the findings of this study as the simple slopes analyses yielded non-significant results and these analyses had even lower power than the interaction analysis. That is, despite the directions of the two slopes depicted in Figure 14, these slopes were not significantly different from zero, meaning that the differences between receiving a higher or lower proportion of likes among both women higher and lower in appearance-contingent self-worth were not significant. Thus, follow-up with a larger sample is necessary to determine how women's level of appearance contingent self-worth affects the relationship between the average proportion of likes received on selfies and self-esteem.

Another potential conclusion is that the *quantity* of likes or positive appearance-related comments received on selfies may not impact self-esteem or appearance satisfaction, but that other related factors such as the quality or source of a comment or of

likes, regardless of number of likes, might (Scissors et al., 2016). These variables were not assessed in the present study, but could be assessed in future research.

Limitations and Future Directions

There were several limitations to the present study. First, the sample size was small, which resulted in low power and greater risk of Type 2 errors. Thus, it is possible that significant findings may have emerged with a larger sample size. If the effects of likes or appearance-based comments on one hand and self-esteem and appearance satisfaction on the other were presumed to be small, rather than medium, as was the case a-priori for this study (see Appendix N), data from over 300 participants would be necessary to detect the significant effects of likes or appearance-based comments and the potential moderating effect of appearance contingent self-worth on the aforementioned outcome variables while accounting for two covariates. However, even with a larger sample, significant findings may not emerge if low frequency of selfie posting is observed again. According to the Contingencies of Self-worth Theory, trait self-esteem is the product of ongoing successes or failures within a self-important domain. Therefore, greater frequency of selfie posting may be necessary to detect effects at the trait level. Although significant effects were not found at the trait level, there may be state effects of receiving likes on self-esteem, which will be assessed in Study III. The sample size was small due to difficulties with recruitment and the high number of participants who did not have any selfies on their Instagram accounts despite reporting that they had posted at least one selfie in the past two months and never or rarely delete posted selfies. The latter suggests that women are not always accurate reporters of their social media behavioural

history. Thus, in future research, it may be beneficial to collect data about social media behaviours through observation, rather than just self-report.

Another limitation of the present study was that comments comprised entirely of emojis were not coded. This conservative approach may have resulted in an underestimation of the number of positive appearance-related comments that women received on their selfies. If emojis were to be coded in future research, it would be helpful to follow-up with participants themselves to determine how they interpret them based on the comments that they receive. Additionally, how individuals interpret emojis and whether interpretations are impacted by psychological variables such as contingencies of self-worth, depressed mood, anxiety, or attribution biases, could be assessed in future research. For example, in cognitive models of depression, it is hypothesized that depressed individuals tend to make negative interpretations that contribute to the maintenance of their depressed mood (Beck, 1979). Indeed, Mogg, Bradbury and Bradley (2005) found that depressed individuals made more negative interpretations of ambiguous stimuli than healthy controls. Thus, a depressed individual might interpret a vague emoji differently from someone who is not depressed.

Lastly, a limitation of this study is that it only focused on a specific aspect of the content that women post on Instagram: selfies. Thus, the impact of positive feedback, in the form of likes or comments, received on other content posted on Instagram was not accounted for. Further, feedback received on other social media platforms was not considered. Observations of Instagram accounts during the coding process revealed that many participants received positive feedback on photographs of themselves, even if the photograph was not a selfie, and this feedback may have impacted their self-esteem

and/or appearance satisfaction. Moreover, as mentioned in the discussion section for Study I, it is possible that other photographs including the self, such as usies, are posted due to a desire for positive feedback. Therefore, the impact of feedback received on all posted photographs including the self on self-esteem and appearance satisfaction could be investigated in future research. It is also worth noting that although video posts were not coded in the present study, several selfie-type videos/boomerangs were posted by participants, such as video clips in which the individual looks into the camera, but does not say anything. These videos were not coded as Instagram replaced the like function with a view counter during data collection for this study. However, the like function has since returned. Thus, the impact of likes versus view counts on videos of oneself could be the subject of future research to determine whether these differentially impact women's self-esteem and/or appearance satisfaction.

CHAPTER 4

Study III: Purpose, Rationale, and Hypotheses

The aim of Study III was to determine the impact of receiving positive feedback on selfies, in the form of likes, on women's *state* self-esteem. Although the results of Study II indicated that there was a non-significant relationship between the average proportion of likes received on selfies over two months and women's trait self-esteem over that time period, this does not negate the potential impact of likes on state self-esteem. In Study II, self-esteem was measured at the end of the two month period, rather than shortly after likes were received on each selfie. In addition, very few of the women in Study II were frequent selfie posters. Thus, the participants had very few opportunities to receive positive appearance-related feedback and for this feedback to potentially

influence their trait self-esteem. Further, even if a significant relationship between likes received on selfies and trait self-esteem had been found in Study II, it would not be possible to distinguish whether receiving more likes on selfies causes greater self-esteem, or whether women with high self-esteem are more likely to receive likes on their selfies than those with low self-esteem perhaps due to a third variable given the study's cross-sectional design. Thus, an experimental study was needed to better understand how positive feedback on selfies posted on social media acutely affects women's self-esteem.

In Study III, the impact of positive feedback received on selfies, in the form of likes, on women's state self-esteem was assessed using an experimental design in which women read vignettes where they posted a selfie and received a certain number of likes on it. The focus was on likes, rather than comments, as they are easier to quantify and manipulate, and girls reported that they care more about receiving likes than comments on social media (Chua & Chang, 2016).

Recall that the Uses and Gratifications theory differentiates between two types of gratifications: sought-gratifications and obtained-gratifications. The distinction is necessary as people do not always obtain their desired gratification from the media with which they engage (Palmgreen et al., 1974). Despite the fact that the majority of women receive likes on the selfies they post on social media (Porch, 2015), not all of these women may feel that the number of likes they receive is sufficient. Research suggests that women may need a certain amount of positive feedback in order to feel satisfied. A study on receiving likes on Facebook posts, not just selfies, showed that more than half of Facebook users feel that it is somewhat important for them to receive "enough" likes and that people's idea of "enough" varies significantly (Scissors et al., 2016). Thus, it is

possible that women not only seek positive feedback when they post selfies on social media, but that they also expect a certain amount of positive feedback (i.e., a certain number of likes). As such, individuals' sought-gratifications need to be considered when assessing the impact of likes on self-esteem. In addition, whether one receives enough likes to fulfill their sought-gratification should be considered as the effect of likes on self-esteem may differ depending on whether individuals obtain their desired number of likes.

In Study III, participants were asked to read and imagine themselves in personalized vignettes, written in second person, in which they received either 50% more or 50% less likes than expected on a selfie, depending on the condition to which they were randomly assigned. This means of manipulating likes was thought to be more externally valid than other potential means, such as having participants read a vignette in which they either receive a set number of likes or no likes, as it considered participants' actual sought gratification. Moreover, people rarely receive zero likes on a photograph (Porch, 2015). Participants' state global self-esteem was measured both pre- and post-reading the vignette and state appearance and social self-esteem were measured after reading the vignette. Participants also provided their attribution for the number of likes they received after completing all measures of self-esteem.

As mentioned previously, approximately 16% of Facebook users indicate that they "feel bad" when a post does not receive "enough" likes (Scissors et al., 2016, p. 1504), and this also has been found in qualitative studies (Porch, 2015). In addition to "feeling bad", it is possible that women who receive an insufficient number of likes on their selfies may experience a decrease in state self-esteem relative to those who obtain more than their expected number of likes. Given that likes can be indicative of relational

value, people may experience a sense of rejection when they do not receive as many likes on a selfie as they had expected, which according to the Sociometer theory, should result in a decrease in state self-esteem (Leary, 2001).

People have been found to interpret social rejections differently depending on their contingencies of self-worth. For example, O'Driscoll and Jarry (2015) found that women high in body-weight contingent self-worth, who were told that other women did not want to work with them on a task, were significantly more likely to attribute the social rejection to their physical appearance than did women low in body weight-contingent self-worth. Body weight-contingent self-worth is considered to be a specific aspect of appearance contingent self-worth, and these two variables have been found to be highly related ($r(243) = .71$; Clabaugh, Karpinski, & Griffin, 2008, p. 343). Thus, this finding suggests that women may be more likely to attribute rejection to a domain that they perceive to be an important determinant of relational value/self-esteem. O'Driscoll & Jarry (2015) did not ask women assigned to the control condition why they thought others wanted to work with them. However, per the combination of the Sociometer and Contingencies of Self-Worth theories, it is likely that women high in body-weight contingent self-worth may also partly have attributed their social inclusion to their weight/physical appearance given that they rely on this domain to enhance or maintain their self-esteem and connectedness to others.

When considering receiving more or less likes than expected on a posted selfie as forms of social inclusion and rejection, respectively, many women may attribute their number of received likes to their appearance since the likes pertain specifically to a photograph of only themselves. For example, a qualitative study found that women

sometimes question whether they actually looked as good in their photograph as they thought when they receive a number of likes that they consider insufficient (Porch, 2015). This suggests that women higher in appearance contingent self-worth may be more likely than women lower in appearance contingent self-worth to attribute their number of received likes to appearance given that contingencies of self-worth can impact people's interpretation for social inclusion/rejection.

In addition, women higher in appearance contingent self-worth may experience decreases in global state self-esteem, as well as lower appearance and social state self-esteem, following the receipt of a number of likes that they perceived to be insufficient compared to women who do not base their self-worth as heavily on their appearance. As mentioned previously, women higher in appearance contingent self-worth may be more likely to interpret their number of received likes in terms of their appearance. Since these women believe that their appearance is important for social inclusion (per the combination of the Sociometer and Contingencies of Self-Worth theories) and likes can signify approval of appearance, these women may feel that their level of acceptance by others is reduced when they do not receive as much positive feedback (i.e., likes) as expected within this domain. Reduced feelings of acceptance within a domain of importance should lower state self-esteem. Moreover, the self-esteem of women higher in appearance contingent self-worth may be more susceptible to feedback, given that these women base their self-worth on an external domain. Individuals with external contingencies of self-worth rely more on external feedback to maintain their self-esteem, which renders their self-esteem less stable (Crocker, 2002). Given these considerations, the following are hypothesized:

H8: Women higher in appearance contingent self-worth will be more likely than women lower in appearance contingent self-worth to attribute the number of likes they received to their appearance.

H9: There will be a main effect of condition (i.e., more or less than expected number of likes received) on changes in global state self-esteem from pre-manipulation to post, and on state social and appearance self-esteem post manipulation. More specifically, individuals in the less than expected number of likes condition will experience decreases in global state self-esteem, whereas women in the more than expected condition will not. In addition, women assigned to the less likes than expected condition will experience lower state appearance and social self-esteem post manipulation than those in the more likes than expected condition.

H10: Condition will interact with appearance contingent self-worth (higher or lower) to predict changes in global state self-esteem from pre-manipulation to post, and on state social and appearance self-esteem post manipulation. More specifically, women higher in appearance contingent self-worth will be more strongly impacted by the number of likes received than those who are lower in appearance contingent self-worth.

In testing Hypotheses 9 and 10, BMI and depressive symptoms will be tested in the analyses as covariates with state appearance and social self-esteem as the dependent variables. BMI and depressive symptoms correlate with these variables and have been controlled in experimental studies with state appearance and social self-esteem as dependent variables (e.g., Boersma & Jarry, 2013; O'Driscoll & Jarry, 2015). Although these variables also have been associated with global self-esteem (Chang, Jarry, & Kong, 2013, $n = 305$), the outcome variable in the present study is a *change* in global self-

esteem. Thus, they will not be controlled for in analyses with change scores as the outcome variable, as there is no a-priori reason to anticipate that BMI or depressive symptoms would contribute to a change in global self-esteem following the receipt of more or less than one's expected number of likes on a selfie.

Study III Methods

Participants

Initially, participants who completed Study I were eligible to participate in Study III if they (1) had an Instagram account and used it regularly, and (2) had posted a selfie on Instagram within the past 30 days (see Appendix U for screening questions). The goal of these criteria was to ensure that all participants would be familiar with the experience of having posted a selfie on Instagram to facilitate relating to the vignette (see Materials). However, during Study III data collection, preliminary analysis of Study I data revealed that many participants posted selfies less than once a month. Thus, the second inclusion criterion was amended to having posted a selfie on Instagram at some point, rather than within the past 30 days. Participants who completed the initial screen and indicated that they use Instagram regularly, but that they had not posted a selfie in the past 30 days, were e-mailed with the new screening question and invited to participate if they had posted a selfie at some point.

Of the 297 valid responders in Study I, 227 women were eligible for Study III based on the amended inclusion criteria. One hundred and eighty-eight women completed Study III and 175 of these women were considered to be valid responders based on having correctly responded to a minimum of three out of four validity checks, with correct answers to both questions on Part 2 of the vignette (see Validity Check section

under Measures), which contained the manipulation ($n_{\text{less than expected}} = 90$, $n_{\text{more thanexpected}} = 85$). These 175 women ranged in age from 18 to 43 years old ($M = 20.93$, $SD = 2.97$), and the majority were single (94.3%, $n = 165$). Self-reported racial/ethnic identity was as follows: 71.4% ($n = 125$) Caucasian/European, 6.3% ($n = 11$) Arab, 4.6% ($n = 8$) African Canadian/Black, 2.9% ($n = 5$) South Asian, 2.9% ($n = 5$) Hispanic, 0.6% ($n = 1$) Native American, and 9.1% ($n = 16$) identified as other/mixed. In terms of level of education, all participants were undergraduate students; 13.1% ($n = 23$) were in their first year, 25.1% ($n = 44$) in their second year, 32.6% ($n = 57$) in their third year, 23.4% ($n = 41$) in their fourth year, and 5.7% ($n = 10$) had completed more than four years of university.

Measures and Materials

Experimental manipulation. Vignettes are stories about individuals or situations that can be used to understand how people may respond to situations without having to expose them to the actual situation (Huges, 1998). They often are used in psychological research and have been effective in manipulating people's mood (e.g., Aubie & Jarry, 2009) and state self-esteem (e.g., Besser & Priel, 2009). Vignettes were used in the present study for the experimental manipulation. They were written in second person, as has been done in other studies when the intent is to assess participants' internal response to a situation, rather than their opinion of a protagonist or the action they would take in response to a situation (e.g., Besser & Priel, 2009; Vandevelde & Miyahara, 2005; Watkins, Scheer, Ovnicek, & Kolts, 2006).

The first portion of the vignette (Part 1), which describes the participant posting a selfie on Instagram, was the same for all participants. The second part of the vignette (Part 2) was personalized to each participant based on information obtained in Study I

and the condition to which they were randomly assigned. More specifically, the second portion of each vignette reflected a situation in which the participant obtained either 50% less or 50% more likes than they typically expect to receive when they post a selfie. For example, if a participant indicated in Study I that they typically expect to receive 100 likes when they post a selfie, and they were assigned to the less-than-expected condition, they received only 50 likes in the vignette. Conversely, if the participant was assigned to the more-than-expected condition, they received 150 likes. In the event that the participant identified an odd number of expected likes (e.g., 25), and as a result the 50% less or more number of likes was not a whole number, the number of likes was rounded down (e.g., 12 and 37, respectively).

The vignette was specifically designed to be relatable to the undergraduate population and was reviewed and edited by members of the Studies in the Psychology of Appearance Lab at the University of Windsor. In addition, various details were included in the vignette to allow for a variety of attributions for number of received likes aside from appearance, such as the time of day the photo was posted and/or the use of hashtags (see Figure 15 or Appendix V for the vignette).

Measures

Moderator variable. The appearance subscale of the Contingencies of Self-Worth Scale as described and administered in Study I was used as the moderator variable.

Dependent variables.

Visual Analog Scales (VASs) are horizontal lines with anchors on which participants place a vertical line to indicate their response. According to Mabe et al. (2014), these scales are more sensitive to within-participant changes than Likert scales as

they are not as easily influenced by recall of previous responses. A visual analog scale with the question "How good do you feel about yourself RIGHT NOW" from 0 (*Not at all good*) to 100 (*Extremely Good*) was used to assess global state self-esteem after reading Part 1, in which the participant takes and posts a selfie, and again after reading Part 2, in which the participant receives a personalized number of likes on her selfie, of the vignette (See Appendix W). Participants also completed Visual Analog Scales assessing mood and sleepiness as distractors at each time point. Change scores were computed by subtracting the Part 2 VAS from the Part 1 VAS. Thus, positive change scores indicate decreases in global state self-esteem, and negative change scores indicate increases.

The State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991) is a 20 item self-report measure assessing state self-esteem that is sensitive to fluctuations in self-esteem resulting from experimental manipulation (See Appendix X). It consists of three subscales: Appearance, Social and Performance state self-esteem, but only the appearance and social self-esteem subscales, which are comprised of six and seven items respectively, were used in the present study. Individuals respond to items such as, "I am pleased with my appearance right now" on a 5-point Likert-type scale from 1 (*Not at all*) to 5 (*Extremely*). Subscale scores are computed by reverse-scoring the reversed items and then summing the ratings on all relevant items, such that higher scores indicate greater state appearance and social self-esteem. The appearance and social state self-esteem subscales have been found to have good internal consistency (α = .87, .90, respectively; Lee & Robbins, 1998). Similarly, in the present study, the appearance and social state self-esteem subscales had Cronbach's alphas of .88 and .86, respectively.

Covariates. Participants were asked to self-report their weight in pounds and height in feet and inches at the end of Study I, and this information was used to compute BMI using the formula weight (lb) / [height (in)]^2 x 703 (Centre for Disease Control, 2014).

The BDI-II, as described and administered in Study I, was used as a potential covariate.

Validity check. Two content-based multiple choice items were administered after each portion of the vignette to ensure that participants read it (See Appendix Y). For example, Part 1 of the vignette, states the following: "As you turn around to grab your seat belt, you catch a glimpse of yourself in the rearview mirror and decide to grab your phone and take a quick selfie, well more like a few selfies. You then looked through them, pick your favourite, and post it on Instagram with the hashtags #RiseandShine #LoveSunnyMornings and a sun emoji." One of the validity checks for Part 1 was: "Based on what you read, which emoji did you use when you posted your selfie? a) a flower, b) a sun, c) a turtle, d) an alarm clock." In Part 2 of the vignette, it states "You pick it up, lock your car and then proceed to go on Instagram while walking back to campus. Once you open the app, you notice the little orange dot underneath the heart/comment icon on the dashboard, so you tap it and see that _____ people have liked the photo you posted this morning." One of the validity checks for Part 2 was: "Based on what you read, which app did you go on? a) Twitter, b) Facebook, c) Snapchat, d) Instagram"

Attribution for number of likes. After reading Part 2 of the vignette, participants were asked to respond to the following open ended question: "Why do you think you got

the number of likes you did on the selfie you posted in the vignette you just read?" This question was used to determine participants' attributions for receiving more or less likes than they expected.

Manipulation check. Participants were presented with the following question after the item about the attribution of likes to determine whether the manipulation was effective: "In your personal opinion, was the number of likes you got on your selfie in the vignette (a) less than you would have expected, (b) about the same as you would expect, or (c) more than you would have expected?"

Procedure

The procedures for this study are depicted in Figure 15. Eligible participants were e-mailed a link to the study approximately two weeks following the completion of Study I. Once they accessed the link, they were presented with a consent form. Those who consented to participate were presented with a demographics questionnaire. Although this information was already obtained in Study I, the demographics questionnaire was re-administered to help support the illusion that Study III was a distinct study. Participants then were presented with the following instructions adapted from Tracy and Robins' (2006, p. 1346) study: "You will be presented with a vignette presented in sections with questions in between. Please read them carefully and think about how you would feel if you were actually living through the experience. Try to imagine the thoughts and feelings you would have if you were actually in [each situation you read about]." Following this, participants were presented with Part 1 of the vignette. After reading Part 1, they were presented with the visual analog scales followed by the validity check questions. Each participant then read a personalized version of Part 2 of the vignette depending on the

experimental condition to which they were assigned, followed by the visual analog scales, SSES, and validity check questions. Then, they were presented with the question about their attribution of the number of likes they received, the manipulation check, and the debriefing page (See Appendix Z), which included a video in which the primary investigator explained the true nature of this study. They also were provided with a letter of information and answers to questions participants might have about the study. Then, participants had to complete multiple choice questions to demonstrate that they understood the debriefing information. If they answered these correctly, they were asked to re-consent to the use of their data in the analyses. If they answered the questions incorrectly they were directed to another page which provided further written clarification and then asked to re-consent to the use of their data. Participants also could click a button to indicate that they had questions about the study that they would like answered before re-consenting to the use of their data, in which case questions would have been answered via e-mail. However, no participants indicated that they had questions and all re-consented.

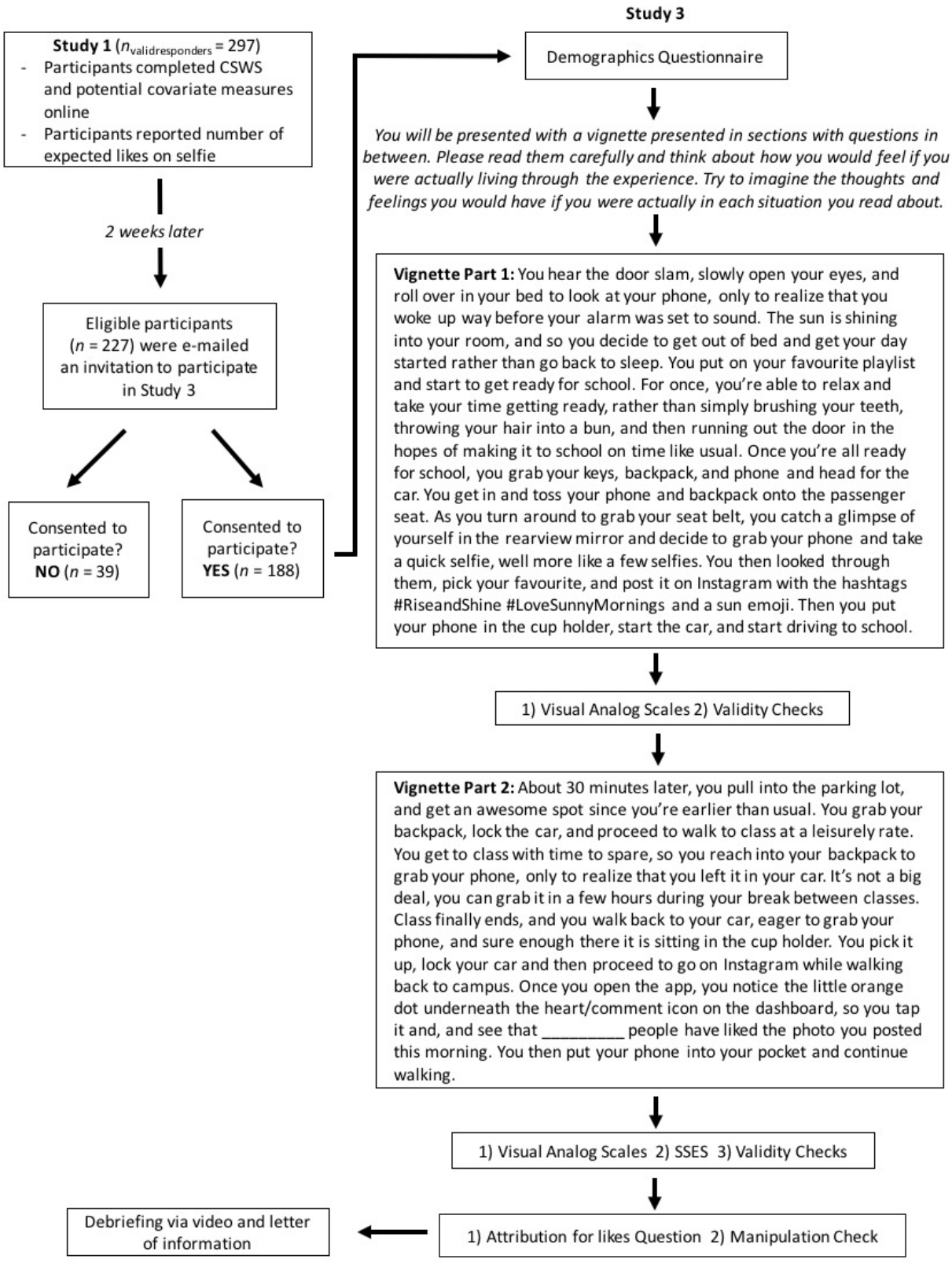

Figure 15. Procedure for Study 3

Study III Results

Overview of Data Analyses

All statistical analyses were performed using IBM SPSS Statistics (Version 25) for Mac. First, data were checked for the validity indicators of attentiveness to the vignettes, as indicated above. Then, a missing data analysis was conducted as well as a check for normality and outliers, as extreme cases can influence regression equations (Tabachnick & Fidell, 2007). The assumptions of multiple regression also were assessed. Qualitative responses to the item about attributions for the number of likes received were coded and Hypothesis 8 was tested using chi-square and logistic regression. Hypotheses 9 and 10 were tested using multiple regression. All parametric analyses were bootstrapped.

Preliminary analyses

Missing data. A missing data analysis was conducted at the item level for all Study III measures except the CSW appearance subscale and BDI-II, as missing values were replaced when the data was cleaned for Study I. Less than 0.16% of all potential values were missing, and Little's MCAR test indicated that the data were missing completely at random, $\chi 2$ (107) = 101.55, p = .631.

Consistent with how item-level data were replaced on the CSW-appearance subscale and BDI-II in Study I, item-level missing data on the SSES were replaced using case mean substitution, which is suitable for handling item-level missing data obtained through self-report measures (Fox-Wasylyshyn & El-Masri, 2005, 2005; Schlomer et al., 2010). That is, after reverse scoring items that were reverse-worded, individuals' missing items on each subscale were replaced with the mean of that participant's responses to the remaining items on the subscale to which the missing value belonged. There were no

missing data points on any of the Visual Analog Scales. Missing data for height and weight were replaced using expectation maximization, so that BMI could be computed and potentially be used as a covariate.

Univariate outliers and normality. Data were checked for univariate outliers using z-scores exceeding |3.29| (Field, 2009), and normality was assessed using skewness, kurtosis, and the Shapiro-Wilks test, which is considered to be more accurate than the Komolgorov-Smirnov test (Field, 2009). For the moderator variable and potential covariates, outliers/normality were checked for the sample as a whole, whereas data from the outcome variables were checked within experimental conditions. None of the variables were normally distributed (ps < .041), with the exception of the SSES social subscale in the more-than-expected condition (p = .077) and the SSES appearance subscale in the less-than-expected condition (p = .137). Skewness and kurtosis were within the recommended ranges of +/- 3 and +/- 10, respectively for all variables (Kline, 2011).

Univariate outliers then were reduced using Windsorization, in which outliers were replaced by values one unit higher/lower than the next most extreme score on that variable (Field, 2009; Tabachnik and Fidell, 2007), and the data were rechecked for normality. Reducing outliers did not improve normality on any of the data that were not normally distributed based on Shapiro-Wilks tests (all ps < .041). However, the skewness and kurtosis for all variables remained within acceptable limits. Thus, rather than transforming the data, all parametric analyses were bootstrapped as this strategy is helpful in reducing the impact of non-normal distributions (Tavakol & Wilcox, 2013).

Descriptive information and zero-order correlations for all Study III variables are presented in Table 14.

Table 14.
Descriptives and zero-order correlation for Study III variables (n = 175)

	Potential Range	Less-than-expected condition	More-than-expected condition	Correlations				
		Mean (SD)	Mean (SD)	2	3	4	5	6
1. BMI		23.45 (5.27)	24.04 (4.61)	.03	.20**	-.40**	-.18*	-.15
2. BDI-II	0 to 63	16.19 (10.52)	14.65 (11.19)	1.00	.28**	-.36**	-.46**	-.10
3. CSW-app	1 to 7	5.34 (0.79)	5.27 (0.98)		1.00	-.43**	-.36**	-.04
4. SSES-app	6 to 30	23.45 (5.36)	24.40 (6.19)			1.00	.72**	.14
5. SSES-soc	7 to 35	19.17 (4.95)	18.92 (5.94)				1.00	.08
6. Global self-esteem (change)	-100 to 100	**0.43 (14.69)**	**-5.33 (13.21)**					1.00
VAS_{SE} Pt 1	0 to 100	74.68 (18.06)	74.33 (20.36)					
VAS_{SE} Pt 2	0 to 100	73.61 (17.38)	78.61 (22.18)					

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; CSW-app = Contingencies of Self-Worth – Appearance Subscale; SSES-app = State Self-esteem Scale – appearance subscale; SSES-soc = State Self-esteem Scale – social subscale; Global self-esteem (change) = Change score computed by subtracting VAS_{SE}Pt2 from VAS_{SE} Pt 1; VAS_{SE} Pt 1 = VAS for global self-esteem administered before the manipulation; VAS_{SE} Pt 1 = VAS for global self-esteem administered after the manipulation

Assumptions of multiple regression. The assumptions of multiple regression were checked for each analysis, as they included different variables. Multivariate outliers were identified using leverage values exceeding 3(k+1)/n for each analysis, but data from all of these individuals were retained as they were not found to be influential cases based on Cook's distance (Field, 2009). Linearity and homoscedasticity were assessed by inspecting plots of the standardized residuals (ZRESID) against the standardized predicted values of the dependent variables (ZPRED). The dots did not appear to "funnel out" or curve, suggesting that both assumptions were met (Field, 2009, p. 247) for all

analyses. Further, the dots appeared to be fairly evenly dispersed around zero (Field, 2009). To assess normality of errors, histograms and P-P plots of the standardized residuals were inspected. The dots on all of the P-P plots were fairly close to the line, and the histograms appeared to be normally distributed, indicating that this assumption was met. In addition, VIF and tolerances were within their respective ranges of less than 10 and greater than 0.1, respectively (Field, 2009), indicating that multicollinearity was not an issue. Lastly, the Durbin-Watson statistic was used to assess independence of errors, and was close to the suggested value of two indicating that this assumption was met.

Effectiveness of manipulation. Of the participants who were deemed valid responders, 90 were randomly assigned to the less-than-expected likes condition and 85 were assigned to the more-than-expected likes condition. On average, women assigned to the less-than-expected condition received 58.28 likes (*SD* = 80.95), whereas women assigned to the more-than-expected condition received an average of 119.21 likes (*SD* = 98.83). All participants were asked to indicate whether they received more than, less than, or about the expected number of likes in the vignette they read. When an individual assigned to the more- or less-than-expected condition reported that they thought they received more or less likes, respectively, the manipulation was considered to be successful. The manipulation was not considered successful if the participant reported that they received their expected number of likes or provided the response that would be expected if they were in the other condition, for example, being assigned to the less-than-expected condition and indicating that they received more likes that expected.

Overall the manipulations were effective for 55.43% of participants (*n* = 97) and only 3.43% of participants (*n* = 6) reported the opposite response. Forty-one percent of all

participants reported that they received their expected number of likes (n = 72). The proportion of participants for whom the manipulation was effective was fairly consistent in the two conditions. Within the more than expected condition (n = 85), 56.47% of participants (n = 48) indicated that they indeed received more likes than expected, 40% (n = 34) reported that they received their expected number of likes, and 3.53% (n = 3) reported that they received less likes than expected. Within the less than expected condition, 54.44% of participants (n = 49) reported receiving less likes than expected, 42.22% (n = 38) reported that they received their expected number of likes and 3.33% (n = 3) reported receiving more likes than expected. Thus, Hypotheses 9 and 10 were tested in two ways: first with all participants based on their assigned condition (n = 175) and second, only among participants for whom the manipulation was effective based on the manipulation check (n = 97).

Effectiveness of random assignment. T-tests were conducted on the predictor variables to determine whether there were pre-existing differences between individuals assigned to each condition (see Table 15). There were no significant differences between individuals assigned to the more- or less-than-expected likes conditions on appearance contingent self-worth, depressive symptoms, or BMI. T-tests also were conducted on the Visual Analog Scale scores from Part 1 that were obtained before the manipulation. Again, there were no significant differences between individuals assigned to the more- or less-than-expected likes conditions on pre-manipulation measures of self-esteem, mood, and sleepiness. Lastly, a t-test was conducted on the number of expected likes reported in Study I. Although the difference in the number of expected likes between individuals assigned to each condition was non-significant, there was a fairly large difference in the

average number of expected likes between the two conditions (See Table 15). Thus, although it statistically appeared that the random assignment was effective and that there were no confounding variables among those measured, it is possible that number of expected likes may be a confounding variable. To ensure that the number of expected likes did not affect the results, it was entered into the regressions testing Hypotheses 9 and 10 as a potential covariate.

Table 15
T-tests between individuals assigned to the more than expected condition and less than expected condition (n = 175)

	Less-than-expected condition	More-than-expected condition				Bootstrapped 95% Confidence Interval	
	Mean(*SD*)	Mean(*SD*)	t	df	Sig.	Lower	Upper
CSW-app	5.34 (0.79)	5.27 (0.98)	0.51	173	.600	-0.199	0.346
BDI-II	16.19 (10.52)	14.65 (11.19)	0.93	173	.373	-1.926	4.662
BMI	23.45 (5.27)	24.04 (4.61)	-0.79	173	.427	-2.002	0.802
$VAS_{self\text{-}esteem}$ Pt 1	74.68 (18.06)	74.33 (20.36)	0.12	173	.897	-5.407	5.900
VAS_{happy} Pt 1	72.59 (20.52)	73.60 (20.14)	-0.33	173	.732	-7.138	4.885
VAS_{sad} Pt 1	20.00 (21.40)	18.09 (18.92)	0.62	173	.539	-3.740	8.339
VAS_{sleepy} Pt 1	46.98 (30.06)	43.15 (30.64)	0.83	173	.396	-5.040	12.492
Number of expected likes	117.38 (161.99)	80.92 (66.37)	1.93	173	.085	-0.371	75.063

Note. CSW-app = Contingencies of Self-Worth – Appearance Subscale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; $VAS_{self\text{-}esteem}$ Pt 1= VAS for global self-esteem administered before the manipulation; VAS_{happy} Pt 1 = VAS for happiness administered before the manipulation; VAS_{sad} Pt 1 = VAS for sadness administered before the manipulation; VAS_{sleepy} Pt 1 = VAS for sleepiness administered before the manipulation; Number of expected likes = number of likes expected on a selfie posted on Instagram

Main Analyses

Hypothesis 8

The eighth hypothesis was that women high in appearance contingent self-worth would be more likely than women low in appearance contingent self-worth to attribute

the number of likes they received in the vignette to their appearance.

Development of a coding scheme. The primary investigator and an undergraduate research assistant blind to the hypothesis initially read through the responses to discuss coding guidelines. Qualitative responses were reviewed in a separate document from the quantitative data to reduce any potential bias arising from the quantitative data (e.g., potentially coding a response as appearance based because the individual was high in appearance-contingent self-worth). Many participants provided multiple reasons as to why they thought they obtained their received number of likes. Thus, it was decided that any responses that included at least one reason that directly referred to the individual's appearance/looks (e.g., because my make-up looked nice, because I looked good in the photograph) or included adjectives typically used to describe appearance (e.g., because I'm pretty/beautiful) would be coded as appearance-based, whereas responses attributing the number of likes only to other factors, such as the time of day the photograph was posted, would not. During the initial read through, it was noted that several responses described the photograph as "nice" or "good" without directly referring to the individual's appearance (e.g., 'it was a good photograph', rather than 'I looked good in the photograph/it was a good photograph of me'). Members of the Studies in the Psychology of Appearance Lab at the University of Windsor were consulted on how these responses should be coded, but without consensus. Some individuals argued that responses with the word "good" not directly in relation to appearance could be referring to other aspects of the image (e.g., lighting or quality of the photograph) and, therefore, were not clearly appearance-based, whereas others argued that women would not refer to a photo as good, unless they thought they 'looked good' in

it. Thus, it was decided that two variables would be coded (1) whether a response was clearly appearance-based – 1(*yes*) or 0(*no*) and (2) whether a response could potentially be interpreted as appearance-based - 1(*yes*) or 0(*no*), with the latter providing a more liberal estimate of the number of women who made appearance-based attributions. Lastly, it was decided that responses that suggested that the individual did not understand the question (e.g., participant reported the number of likes they received instead of explaining why they thought they received a certain number of likes) would not be coded.

Coding. There were 175 responses to the attribution question from valid responders. Seven individuals provided responses that indicated that they did not understand the question. Thus, a total of 168 responses were coded by the primary investigator and the aforementioned research assistant. When coding responses as clearly appearance-based or potentially appearance-based, there were acceptable agreements between coders (Krippendorf, 1980). The Kappa's for the coding of clearly appearance-based and potentially appearance-based responses were 0.98 and 0.94, respectively. Responses with inconsistent coding were reviewed with members of the Studies in the Psychology of Appearance lab to determine how they would be coded, and the coding was determined based on the views of the majority. Of the 168 responses, 30.95% were clearly appearance-based (n = 52) and 50.60% were potentially appearance-based (n = 85). The latter includes all attributions that could be interpreted as potentially being related to appearance, including responses that were clearly appearance-based. Other responses only attributed the likes to other factors such as time of day when the photograph was posted, number of followers, frequency of selfie posting, obligatory likes, positive message in the photograph, the use of hashtags, etc. Examples of

participant responses are presented in Table 16.

Table 16
Examples of participants' responses to the attribution for likes question

	Clearly appearance-based attributions	Potentially appearance-based attributions	Not appearance-based attributions
Assigned to the MORE than expected likes condition	Participant #92: *"Because i havent posted a selfie in a while, and i looked nice."* Participant #224: *"Because I looked good. I had time to get ready, do my hair, put on makeup. People liked the way of my appearance."* *Participant #274: Because people thought i looked good in that picture, as well as some obligatory likes from friends and family.* *Participant #284: "Because I'm pretty."*	Participant #5: *"It was a good picture. Could have been the time of day, lots of people saw it."* Participant #73: *"Because I was feeling confident and uploaded a nice picture with a good caption."* Participant 155: *"I got 12 because I don't have a lot of people that follow me, but the ones that do like to acknowledge when I post nice pictures."*	Participant #36 *"Because I have a lot of followers."* *Participant #42: "Because it contained a positive message"* Participant #102: *"Because of the hashtag."* Participant #140: *"People usually go on Instagram right when they wake up, so if I posted the selfie earlier in the morning there were more people who saw it and decided to like it."*
Assigned to the LESS than expected likes condition	Participant #79: *"I think I got that number of likes on my picture because I looked good in the picture and people like me. :) I usually get around 250 likes on my selfies however in the hour that I was in class, 130 likes isn't bad. If this was the number of likes that I ended up getting, I probably wouldn't be very happy. Although it shouldn't matter, my likes and comments definitely do make me feel better or worse about myself."* Participant #81: *"I'm not sure, 10 likes doesnt seem like alot but i dont get more than 20 usually, mabe because thgeres not alot of followers or i dont look as good as i thought."* Participant #285: *"I feel I got the likes that I did because of the how I looked I get a lot of comments on my eyes and I was standing a certain way to look thinner so I feel this may be part of the reason I got the likes that I did"*	Participant #34: *"It was a good picture"* Participant #116: *"I think those who liked it thought it was a nice picture and liked that I was having a good morning"* *Participant #274: "It was a nice picture and positive message. Also my friends like everything."* *Participant #286: "Because it's a quality selfie."*	Participant #45: *"Because I am liked by those individuals as well as I like their pictures so they like mine in return."* Participant #228: "*Because no one really cares if you woke up early and went to school. They are giving likes out of pity."* *Participant #262: "People were trying to be friendly. It doesn't mean much."* Participant #264: *"I only reached 65 likes because it is early in the morning , not everyone is awake at this moment looking at instagram if it were posted at a later time it would have reached more likes."*

Chi-square analyses. A median split was conducted on appearance contingent self-worth to classify participants as high (n = 71; M = 6.08, SD = 0.38) or low (n = 75; M = 4.51, SD = 0.63) in appearance-contingent self-worth (median = 5.40). Twenty-two participants had appearance-contingent self-worth scores that fell at the median and so they were not included in the analysis. Of the 146 remaining participants, 43 individuals attributed their number of received likes clearly to appearance (29.45%) and 103 individuals attributed their likes to other factors (70.55%). A 2 (appearance contingent self-worth: high vs low) x 2 (clear appearance attribution: yes vs no) Pearson chi-square analysis was conducted. The expected frequencies were all greater than five, indicating that the assumption of this analysis was met (Field, 2009; McHugh, 2013). There was a significant relation between level of appearance-contingent self-worth and whether attributions were clearly appearance-based, X^2 (1, N = 146) = 25.36, p = .003. Consistent with Hypothesis 8, 40.85% of the 71 women classified as high in appearance contingent self-worth (scores > 5.4) attributed their number of received likes to their appearance, whereas only 18.67% of the 75 women classified as being low in appearance contingent self-worth attributed likes to their appearance. Frequencies of observed and expected counts are presented in Table 17.

Table 17.
Expected Counts for 2x2 Pearson chi-square with clearly appearance-based attributions (n = 146)

			Was the attribution of received likes clearly appearance-based?		
			Yes	No	TOTAL
Appearance contingent self-worth:	High	Count	29 (40.85%)	42 (59.15%)	71
		Expected Count	20.9	50.1	71
	Low	Count	14 (18.67%)	61 (81.33%)	75
		Expected Count	22.1	52.9	75
	TOTAL		43	103	146

Fifty percent of the 146 individuals included in the aforementioned analysis made attributions that could potentially be interpreted as appearance-based (n = 73). A 2 (appearance contingent self-worth: high vs low) x 2 (potential appearance attribution: yes vs no) Pearson chi-square analysis was conducted. Once again, the expected frequencies were all greater than five, indicating that the assumption of this analysis was met (Field, 2009; McHugh, 2013). With this liberal coding scheme for attributions, there was a non-significant relation between level of appearance contingent self-worth and whether attributions were potentially appearance-based, X^2 (1, N = 146) = 0.69, p = .508. Frequencies of observed and expected counts based on the more liberal coding scheme for appearance attributions are presented in Table 18.

Table 18
Expected Counts for 2x2 Pearson chi-square with potentially appearance-based attributions (n = 146)

			Was the attribution of received likes potentially appearance-based?		
			Yes	No	TOTAL
Appearance contingent self-worth:	High	Count	38 (53.52%)	33 (46.48%)	71
		Expected Count	35.5	35.5	
	Low	Count	35 (46.67%)	40 (53.33%)	75
		Expected Count	37.5	37.5	
	TOTAL		73	73	146

Supplementary analysis. As mentioned above, Hypothesis 8 was assessed using a median-split and chi-square tests in accordance with O'Driscoll and Jarry (2015). Median splits have been criticized for a potential loss of power resulting in increased likelihood of Type 2 error (i.e., false negative). Although one of the chi-square tests in this study yielded significant results, suggesting that there may have been sufficient power, data from 22 participants were excluded as these individuals scored at the median. Thus, a binary logistic regression was conducted among all 168 individuals who correctly responded to the attribution of likes question to further assess Hypothesis 8. This type of analysis allows for the prediction of a dichotomous outcome variable, here whether or not the attribution was appearance-based, with predictors that can be categorical or continuous, in this case appearance contingent self-worth.

The binary logistic regression model, with appearance contingent self-worth as a predictor and whether or not attributions were clearly appearance-based as the outcome variable, was significantly better than a baseline model (constant) that assumes that all

participants would fit into one of the two outcome conditions, $\chi^2(1, N = 168) = 7.26$, $p = .007$. Appearance contingent self-worth was a statistically significant predictor of whether or not attributions were clearly appearance-based, *Wald*(1) = 6.59, $p = .011$, 95% CI [0.19, 1.02]. As appearance contingent self-worth increased, participants were 1.73 times more likely to have attributed their likes clearly to their appearance, 95% CI for Odds Ratio [1.14, 2.63]. However, this model explained only 5.95% (Nagelkerke R^2) of the variance in attribution of likes, and the goodness of fit to the data was not significant based on the Hosmer and Lemeshow Test, $\chi^2(8, N = 168) = 10.21$, $p = .251$. Thus, although appearance contingent self-worth significantly predicted whether women made attributions that were clearly appearance-based, it does not have sufficient predictive power independent of other variables.

Table 19
Logistic Regression with clearly appearance-based attributions as the outcome variable (n = 168)

							95% CI for Exp(B)	
	B	S.E.	Wald	df	Sig	Exp(B)	Lower	Upper
Appearance contingent self-worth	0.55	0.21	6.59	1	.011	1.73	1.14	2.64
Constant	-3.75	1.18	10.14	1	.001	.02		

With the more liberal coding of whether attributions were appearance-based, the binary logistic regression model was not significantly better than a baseline model (constant) that assumes that all participants would fit into one of the two outcome conditions, $\chi^2(1, N = 168) = 1.50$, $p = .221$. In addition, appearance contingent self-worth did not predict whether or not attributions were potentially appearance-based, *Wald*(1) =

1.48, p = .224, 95% CI [-0.14, 0.56]. Thus, it does not appear that the null result found with the chi-square analysis was a Type 2 error.

Table 20
Logistic Regression with whether attributions were potentially appearance-based as the outcome variable (n = 168)

	B	S.E.	Wald	df	Sig	Exp(B)	95% CI for Exp(B) Lower	Upper
Appearance contingent self-worth	0.22	0.18	1.48	1	.224	1.24	0.876	1.764
Constant	-1.13	0.96	1.38	1	.240	0.32		

Hypothesis 9 & 10

Hypothesis 9 was that there would be a main effect of condition (i.e., more or less than expected number of likes received) on changes in state global self-esteem, and state social and appearance self-esteem measured post manipulation only, such that individuals in the less-than-expected number of likes condition would experience larger decreases in global state self-esteem, and lower appearance and social state self-esteem than those in the more-than-expected condition. Hypothesis 10 was that there would be a significant interaction between condition and appearance contingent self-worth in predicting changes in global self-esteem, and social and appearance state self-esteem post manipulation. More specifically, the effect of the number of likes received was expected to be more pronounced for women higher in appearance contingent self-worth than for women lower in appearance contingent self-worth.

To test Hypotheses 9 and 10, six multiple regressions were conducted, two for each of the outcome measures: one conducted with all participants and the other conducted only among individuals for whom the manipulation was found to be effective.

Predictor variables were centered prior to being entered into the regressions (Field, 2009). For the analyses with changes in global self-esteem as the outcome variables, the potential covariate, number of expected likes, was entered into Block 1, and was only retained if it significantly contributed to the model. First order effects were entered into Block 2. This included condition, which was dummy-coded as 1(*more than expected*) and 0 (*less than expected*), and appearance contingent self-worth. The interaction term, appearance contingent self-worthXcondition, was entered in Block 3. For the analyses with state appearance self-esteem and state social self-esteem as the outcome measures, number of expected likes, BMI and depression scores were entered into Block 1 as potential covariates and only retained if they contributed significantly to the model. First order effects were entered in Block 2 and the interaction term was entered in Block 3.

Analyses on the Full Sample

Changes in global self-esteem. Step 1 of the model, which contained number of expected likes, was not significant, $F(1, 173) = 0.28$, $p = .600$, and number of expected likes did not significantly contribute to the model, $\beta = 0.04$, $t(173) = 0.53$, $p = .373$, 95% CI [-0.01, 0.02]. Thus, the regression was conducted again without this variable, since it was not a significant covariate. In the new regression, Step 1 of the model, which contained condition and appearance contingent self-worth, was significant, $F(2, 172) = 3.86$, $p = .023$, and accounted for 4.3% of the variance. Consistent with Hypothesis 9, there was a main effect of condition, $\beta = -0.20$, $t(172) = -2.74$, $p = .004$, 95% CI [-9.85, -1.61]. Thus, whether women received more or less than their expected number of likes impacted changes in state global self-esteem. Review of group means (see Table 14 – Descriptive Table) indicated that the change score for the less than expected number of

likes condition was close to zero, whereas there was a negative change score for the more than expected number of likes condition, which is indicative of an increase in state global self-esteem (see Measures section). Appearance contingent self-worth did not significantly contribute to the model, β = -0.69, $t(172) = -0.04$, $p = .547$, 95% CI [-3.08, 1.70], and adding the interaction term in Step 2 did not improve the prediction of changes in global self-esteem following the manipulation, $F_{change}(1, 171) = 0.04$, $p = .831$. Thus, Hypothesis 10, as it pertained to global self-esteem, was not confirmed. Statistics for the final model are presented in Table 21.

Table 21
Regression with changes in global self-esteem as the outcome variable (n = 175)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.21	.04	(Constant)	0.46	1.48		0.31	.771	-2.53	3.36
			Condition	-5.81	2.12	-0.20	-2.74	.004	-9.85	-1.61
			CSW-app	0.69	1.20	-0.04	-0.58	.547	-3.08	1.70
2	.21	.04	(Constant)	0.47	1.48		0.32	.764	-2.43	3.33
			Condition	-5.81	2.13	-0.21	-2.73	.006	-9.85	-1.70
			CSW-app	-1.01	1.89	-0.06	-0.53	.663	-5.67	3.11
			Condition x CSW-app	0.53	2.45	0.03	0.21	.837	-4.38	5.95

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

State appearance self-esteem. Step 1 of the model, which contained number of expected likes, BMI, and depressive symptoms was significant, $F(3, 171) = 22.90$, $p < .001$ and accounted for 28.66% of the variance. BMI and depressive symptoms significantly contributed to the model, but number of expected likes did not, β = 0.07, $t(171) = 1.07$, $p = .179$, 95% CI [-0.001, 0.012]. Thus, only BMI and depressive symptoms were retained as covariates. With number of expected likes removed, Step 1 of

the model, which contained BMI and depressive symptoms, was significant, $F(2, 172) = 33.75$, $p < .001$, and accounted for 28.19% of the variance. Adding condition and appearance contingent self-worth in Step 2 significantly improved the prediction of state appearance self-esteem, $F_{change}(2, 170) = 9.34$, $p < .001$ and accounted for an additional 7.12% of the variance. Although, appearance contingent self-worth significantly contributed to the model, in contrast to Hypothesis 9, condition did not, $\beta = -0.03$, $t(170) = -0.55$, $p = .581$, 95% CI [-1.70, 0.96]. Additionally, adding the interaction term in Step 3 did not improve prediction of state appearance self-esteem following the manipulation, $F_{change}(1, 169) = 0.56$, $p = .453$, nor did it significantly contribute to the model. Thus, Hypothesis 10, as it pertained to state appearance self-esteem, was not confirmed. Statistics for the final model are presented in Table 22.

Table 22
Regression with state appearance self-esteem as the outcome variable (n = 175)

Step	R	R^2	Variables entered	b	SE b	β	t	sig	Bootstrapped 95% CI Lower	Bootstrapped 95% CI Upper
1	.53	.28	(Constant)	19.05	0.35		54.33	.001	18.32	19.76
			BMI	-0.43	0.07	-0.39	-6.01	.001	-0.55	-0.30
			BDI-II	-0.18	0.03	-0.35	-5.44	.001	-0.24	-0.10
2	.59	.35	(Constant)	19.22	0.47		41.09	.001	18.41	20.08
			BMI	-0.36	0.07	-0.33	-5.24	.001	-0.49	-0.23
			BDI-II	-0.14	0.03	-0.28	-4.32	.002	-0.21	-0.06
			Condition	-0.37	0.67	-0.03	-0.55	.581	-1.69	0.90
			CSW-app	-1.73	0.40	-0.28	-4.31	.001	-2.45	-1.01
3	.60	.36	(Constant)	19.24	0.47		41.04	.001	18.43	20.07
			BMI	-0.37	0.07	-0.33	-5.26	.001	-0.49	-0.23
			BDI-II	-0.14	0.03	-0.28	-4.36	.002	-0.21	-0.07
			Condition	-0.37	0.67	-0.03	-0.55	.569	-1.68	0.85
			CSW-app	-2.07	0.61	-0.34	-3.43	.001	-3.08	-1.00
			Condition x CSW-app	0.58	0.78	0.07	0.75	.413	-0.74	2.02

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Condition = 1 (*more than –*) or 0 (*less than -*) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

State social self-esteem. Step 1 of the model, which contained number of expected likes, BMI, and depressive symptoms was significant, $F(3, 171) = 17.66$, $p < .001$ and accounted for 23.66% of the variance. BMI and depressive symptoms significantly contributed to the model, but number of expected likes did not, $\beta = -0.03$, $t(171) = -0.39$, $p = .588$, 95% CI [-0.01, 0.01]. Thus, only BMI and depressive symptoms were retained as covariates. With number of expected likes removed, Step 1 which contained BMI and depressive symptoms, was significant, $F(2, 172) = 26.55$, $p < .001$, accounting for 23.60% of the variance. Adding condition and appearance contingent self-worth in Step 2 significantly improved the prediction of state social self-esteem, $F_{change}(2,$

170) = 5.60, p = .004 and accounted for an additional 4.7% of the variance. Appearance contingent self-worth significantly contributed to the model. However, in contrast to Hypothesis 9, condition did not significantly contributed to the model, β = 0.05, t(170) = 0.83, p =.410, 95% CI [-0.92, 2.23]. Additionally, adding the interaction term in Step 3 did not improve prediction of state social self-esteem following the manipulation, F_{change}(1, 169) = 0.21, p =.646, nor did it significantly contribute to the model. Thus, Hypothesis 10, as it pertained to state social self-esteem, was not confirmed. Statistics for the final model are presented in Table 23.

Table 23
Regression with state social self-esteem as the outcome variable (n = 175)

Step	R	R^2	Variables entered	b	SE b	β	t	sig	Bootstrapped 95% CI Lower	Bootstrapped 95% CI Upper
1	.47	.24	(Constant)	23.91	0.38		62.23	.001	23.14	24.68
			BMI	-0.20	0.08	-0.17	-2.54	.004	-0.33	-0.09
			BDI-II	-0.24	0.04	-0.45	-6.76	.001	-0.32	-0.16
2	.53	.28	(Constant)	23.61	0.52		45.12	.001	22.66	24.61
			BMI	-0.15	0.08	-0.13	-1.95	.017	-0.29	-0.04
			BDI-II	-0.21	0.04	-0.39	-5.71	.001	-0.29	-0.12
			Condition	0.62	0.75	0.05	0.83	.414	-0.92	2.23
			CSW-app	-1.45	0.45	-0.22	-3.21	.002	-2.29	-0.57
3	.53	.28	(Constant)	23.62	0.52		45.00	.001	22.64	24.59
			BMI	-0.15	0.08	-0.13	-1.96	.019	-0.29	-0.04
			BDI-II	-0.21	0.04	-0.39	-5.72	.001	-0.29	-0.12
			Condition	0.62	0.75	0.05	0.82	.420	-0.92	2.24
			CSW-app	-1.68	0.68	-0.26	-2.48	.008	-2.89	-0.27
			Condition x CSW-app	0.40	0.87	0.05	0.46	.628	-1.30	2.06

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Analyses on Reduced Sample

Changes in global self-esteem. Among the 97 individuals for whom the manipulation was effective, Step 1 of the model, which contained condition and appearance contingent self-worth, was not significant, $F(2, 94) = 2.33$, $p = .103$. Neither condition nor appearance contingent self-worth significantly contributed to the model. Adding the interaction term in Step 2 did not improve the prediction of changes in global self-esteem following the manipulation, $F_{change}(1, 93) = 0.72$, $p = .401$. Thus, Hypothesis 10 as it pertained to changes in global self-esteem, was not confirmed. However, in the final model, condition emerged as a significant predictor of changes in global self-esteem based on the bootstrapped confidence interval which did not contain zero, $\beta = -0.21$, $t(93) = -2.06$, $p = .063$, 95% CI [-12.60, -0.52], providing support for Hypothesis 9. Statistics for the final model are presented in Table 24.

Table 24
Regression with changes in global self-esteem as the outcome variable (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.22	.05	(Constant)	1.22	2.08		0.59	.573	-2.91	5.58
			Condition	-5.87	2.99	-0.20	-1.96	.080	-12.28	0.41
			Appearance CSW	-1.04	1.77	-0.06	-0.59	.603	-4.69	3.00
2	.23	.06	(Constant)	1.21	2.08		0.58	.575	-2.98	5.60
			Condition	-6.23	3.03	-0.21	-2.06	.063	-12.60	-0.51
			Appearance CSW	-2.58	2.54	-0.15	-1.02	.463	-9.77	4.14
			Condition x Appearance CSW	2.98	3.54	0.13	0.84	.492	-4.76	12.13

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

State appearance self-esteem. Step 1 of the model, which contained BMI and depressive symptoms, was significant, $F(2, 94) = 13.76$, $p < .001$, and accounted for 22.65% of the variance. Both BMI and depressive symptoms significantly contributed to the model. Thus, both covariates were retained. Adding condition and appearance contingent self-worth in Step 2 significantly improved the prediction of state appearance self-esteem, $F_{change}(2, 92) = 6.22$, $p = .003$ and accounted for an additional 9.21% of the variance. Again, appearance contingent self-worth significantly contributed to the model, but condition did not, $\beta = 0.04$, $t(92) = .42$, $p = .677$, 95% CI [-1.328, 2.144]. Thus, Hypothesis 9 was not supported. Additionally, adding the interaction term in Step 3 did not improve prediction of state appearance self-esteem following the manipulation, $F_{change}(1, 91) = 0.69$, $p = .407$, nor did it significantly contribute to the model. Thus, Hypothesis 10, as it pertained to social self-esteem, was not confirmed, and it appears that the aforementioned null findings with state appearance self-esteem as the outcome based on the full sample were not due to an ineffective manipulation. Statistics for the final model are presented in Table 25.

Table 25
Regression with state appearance self-esteem as the outcome variable (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.48	.23	(Constant)	19.02	0.49		38.53	.001	17.96	20.01
			BMI	-0.50	0.12	-0.39	-4.29	.001	-0.72	-0.29
			BDI-II	-0.15	0.05	-0.28	-3.04	.007	-0.26	-0.03
2	.56	.32	(Constant)	19.11	0.67		28.60	.001	18.09	20.17
			BMI	-0.47	0.11	-0.37	-4.15	.001	-0.68	-0.27
			BDI-II	-0.11	0.05	-0.21	-2.33	.056	-0.23	0.00
			Condition	0.40	0.96	0.04	0.42	.653	-1.33	2.14
			CSW-app	-2.02	0.57	-0.32	-3.52	.001	-3.01	-1.04
3	.57	.32	(Constant)	19.10	0.67		28.54	.001	18.04	20.12
			BMI	-0.47	0.11	-0.37	-4.16	.001	-0.69	-0.26
			BDI-II	-0.11	0.05	-0.21	-2.38	.049	-0.23	-0.01
			Condition	0.29	0.97	0.03	0.30	.764	-1.70	1.95
			CSW-app	-2.49	0.81	-0.39	-3.09	.001	-3.91	-1.12
			Condition x CSW-app	0.93	1.12	0.11	0.83	.345	-0.93	3.05

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

State social self-esteem. Step 1 of the model, which contained BMI and depressive symptoms, was significant, $F(2, 94) = 10.27$, $p < .001$, and accounted for 17.93% of the variance. Both BMI and depressive symptoms significantly contributed to the model. Thus, both covariates were retained. Adding condition and appearance contingent self-worth in Step 2 significantly improved the prediction of state social self-esteem, $F_{change}(2, 92) = 8.77$, $p < .001$ and accounted for an additional 13.14% of the variance. Again, appearance contingent self-worth significantly contributed to the model. However, in contrast to Hypothesis 9 condition did not significantly contributed to the model, $\beta = 0.11$, $t(92) = 1.19$, $p = .410$, 95% CI [-0.97, 3.22]. Additionally, adding the

interaction term in Step 3 did not improve prediction of state social self-esteem following the manipulation, $F_{change}(1,91) = 0.45$, $p = .504$, nor did it significantly contribute to the model. Thus, Hypothesis 10 was not confirmed, and it appears that the aforementioned null findings with state social self-esteem as the outcome based on the full sample were not due to an ineffective manipulation. Statistics for the final model are presented in Table 26.

Table 26
Regression with state social self-esteem as the outcome variable (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.42	.18	(Constant)	24.16	0.52		46.36	.001	23.01	25.28
			BMI	-0.26	0.12	-0.20	-2.13	.025	-0.50	-0.03
			BDI-II	-0.21	0.05	-0.37	-4.00	.003	-0.34	-0.06
2	.56	.31	(Constant)	23.92	0.69		34.72	.001	22.81	25.04
			BMI	-0.24	0.12	-0.18	-2.08	.036	-0.48	-0.01
			BDI-II	-0.16	0.05	-0.29	-3.28	.024	-0.29	-0.02
			Condition	1.18	0.99	0.11	1.19	.260	-0.97	3.22
			CSW-app	-2.45	0.59	-0.37	-4.14	.001	-3.49	-1.18
3	.56	.31	(Constant)	23.91	0.69		34.61	.001	22.81	25.04
			BMI	-0.24	0.12	-0.19	-2.09	.041	-0.48	-0.01
			BDI-II	-0.16	0.05	-0.30	-3.31	.021	-0.30	-0.02
			Condition	1.09	1.01	0.10	1.08	.302	-1.23	3.08
			CSW-app	-2.84	0.83	-0.43	-3.41	.001	-4.23	-1.44
			Condition x CSW-app	0.78	1.16	0.09	0.67	.470	-1.30	3.17

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Summary of results for Hypotheses 9 and 10

The pattern of results for the analyses for Hypotheses 9 and 10 were consistent regardless of whether the analyses were conducted on the full sample or only among the

individuals for whom the manipulation was effective.[3] A significant effect of condition was seen only when change in global self-esteem was used as the outcome variable. When post manipulation state appearance and social self-esteem were used as outcome variables, only appearance contingent self-worth emerged as a significant predictor. The interaction between condition and appearance contingent self-worth was not significant regardless of the outcome measure.

Based on the above findings, Hypothesis 10 was not confirmed regardless of the outcome variable. However, the interpretation of the results for Hypothesis 9 are not clear given the study design and analyses conducted. It could be that condition, in terms of whether women receive more or less likes than expected on a posted selfie, affects only global self-esteem, rather than state appearance or social self-esteem, specifically. Alternatively, it could be that condition affects global, appearance, and social self-esteem, but that the effect of condition on the latter two variables was masked by the use of covariates. BMI and depressive symptoms were included as covariates in the analyses with state appearance and social self-esteem as the outcome variables and accounted for a significant amount of variance in each of the analyses; these variables were not included in the analysis with change in global self-esteem as the outcome variable. The impact of condition on post-manipulation state social and appearance self-esteem also may not have

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[3] Given potential defensive responding (see Study III Discussion), analyses also were conducted among participants who indicated that they received their expected number of likes, even though their vignette had been manipulated such that they read that they received either 50% more or 50% likes than they typically expect to receive (n = 72). The pattern of results were consistent with the analyses conducted among the full sample and the reduced sample including only individuals for whom the manipulation was effective. The main effect of condition on changes in global self-esteem neared significance (p = .072), and the effects of condition on appearance and social self-esteem were non-significant (ps >. 456).

emerged as significant because these variables were only measured post-manipulation rather than pre- and post-manipulation. That is, it is possible that measuring state social and appearance self-esteem only post-manipulation as a between group variable was not an effective way of detecting the impact of receiving more or less likes than expected on a posted selfie, and that the impact of condition on self-esteem may only be noticed when assessing pre-post manipulation changes. Lastly, it is possible that the significant effect of condition on change in global self-esteem is not attributable to the use of a change score, and that condition affects changes more generally, rather than changes in global self-esteem specifically. Thus, additional analyses were conducted to clarify the findings. Given that number of expected likes did not emerge as a significant covariate in any of the aforementioned analyses, it was not included in the supplemental analyses.

Supplementary analyses to clarify findings for Hypotheses 9 and 10

To determine whether BMI and depressive symptoms may have accounted for a large enough amount of variance to mask the effect of condition on state appearance and social self-esteem, the analyses with these two outcome variables were conducted again, but without the use of BMI and depressive symptoms as covariates. This resulted in the same pattern of results as that previously found regardless of whether the analyses were conducted with the full sample or the reduced sample for whom the manipulation was effective (see Tables 28, 29, 30, and 31), suggesting that the use of covariates did not mask the potential impact of condition on state appearance and social self-esteem post manipulation.

Table 27

Regression conducted on the full sample with state appearance self-esteem as the outcome variable and BMI and BDI removed from the model (n = 175)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.43	.48	(Constant)	19.25	0.52		36.89	.001	18.363	20.226
			Condition	-0.43	0.75	-0.04	-0.57	.594	-1.930	1.026
			Appearance CSW	-2.62	0.42	-0.43	-6.17	.001	-3.391	-1.779
2	.43	.48	(Constant)	19.26	0.52		36.77	.001	18.353	20.226
			Condition	-0.43	0.75	-0.04	-0.57	.594	-1.957	1.055
			Appearance CSW	-2.74	0.67	-0.45	-4.10	.001	-3.885	-1.424
			Condition x Appearance CSW	0.21	0.87	0.03	0.24	.815	-1.376	1.711

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 28

Regression conducted on the reduced sample for whom the manipulation was effective with state appearance self-esteem as the outcome variable and BMI and BDI removed from the model(n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.39	.15	(Constant)	19.68	0.72		27.19	.001	18.327	20.957
			Condition	-0.25	1.04	-0.02	-0.24	.812	-2.365	1.735
			Appearance CSW	-2.47	0.61	-0.39	-4.03	.001	-3.496	-1.289
2	.39	.16	(Constant)	19.68	0.73		27.07	.001	18.376	20.917
			Condition	-0.33	1.06	-0.03	-0.31	.761	-2.475	1.707
			Appearance CSW	-2.79	0.89	-0.44	-3.15	.003	-4.293	-1.121
			Condition x Appearance CSW	0.62	1.23	0.07	0.50	.577	-1.642	3.280

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 29
Regression conducted on the full sample with state social self-esteem as the outcome variable and BMI and BDI removed from the model (n = 175)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.36	.13	(Constant)	23.53	0.57		41.18	.001	22.452	24.601
			Condition	0.79	0.82	0.07	0.96	.351	-0.818	2.440
			Appearance CSW	-2.31	0.46	-0.35	-4.98	.001	-3.100	-1.297
2	.36	.13	(Constant)	23.53	0.57		41.04	.001	22.452	24.608
			Condition	0.79	0.82	0.07	0.96	.359	-0.832	2.451
			Appearance CSW	-2.30	0.73	-0.35	-3.15	.001	-3.469	-0.927
			Condition x Appearance CSW	-0.01	0.95	0.00	-0.01	.985	-1.773	1.828

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 30
Regression conducted on the reduced sample for whom the manipulation was effective with state social self-esteem as the outcome variable and BMI and BDI removed from the model (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.45	.20	(Constant)	24.27	0.72		33.65	.001	23.072	25.366
			Condition	0.95	1.04	0.09	0.91	.360	-1.150	3.041
			Appearance CSW	-2.96	0.61	-0.45	-4.83	.001	-3.946	-1.909
2	.45	.20	(Constant)	24.27	0.72		33.49	.001	23.070	25.420
			Condition	0.90	1.05	0.08	0.85	.398	-1.261	2.960
			Appearance CSW	-3.18	0.88	-0.49	-3.60	.001	-4.733	-1.737
			Condition x Appearance CSW	0.43	1.23	0.05	0.35	.723	-1.537	2.800

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

State appearance and social self-esteem were measured using two subscales on the SSES administered post-manipulation. A total score on the SSES also can be computed to obtain a measure of state global self-esteem. Thus, an analysis with the

SSES total score as the outcome variable was conducted to determine whether there was a significant effect of condition on state global self-esteem, without the use of a change score. If condition were to emerge as a significant predictor in this analysis, it would suggest that whether women receive more or less likes than expected on a posted selfie impacts global self-esteem, but not appearance or social self-esteem, specifically. If condition does not significantly predict state global self-esteem, it would remain possible that significant effects on state appearance or social self-esteem were not found due to the specific measure used or the effect not being noticed on a post-manipulation measure. Similarly to when the analyses were conducted with the state appearance and social self-esteem subscales as outcome variables, condition did not emerge as a significant predictor whether the analyses were conducted on the full sample or the reduced sample for whom the manipulation was effective, regardless of whether BMI or BDI were included as covariates, but appearance contingent self-worth did. The statistics for the analyses are presented in Tables 31, 32, 33, and 34.

Table 31

Regression conducted on the full sample with state global self-esteem (SSES total score) as the outcome variable and BMI and BDI included as covariates (n = 175)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.54	.29	(Constant)	68.03	0.93		73.42	.001	66.180	69.800
			BMI	-0.64	0.19	-0.22	-3.39	.002	-0.962	-0.321
			BDI-II	-0.64	0.09	-0.48	-7.50	.001	-0.824	-0.432
2	.56	.32	(Constant)	67.54	1.27		53.02	.001	65.328	69.825
			BMI	-0.54	0.19	-0.18	-2.85	.006	-0.855	-0.215
			BDI-II	-0.57	0.09	-0.43	-6.53	.001	-0.766	-0.356
			Condition	1.01	1.83	0.04	0.55	.570	-2.712	4.772
			CSW-app	-2.99	1.10	-0.18	-2.73	.004	-4.916	-0.793
3	.57	.32	(Constant)	67.57	1.28		52.96	.001	65.322	69.856
			BMI	-0.54	0.19	-0.19	-2.87	.006	-0.864	-0.222
			BDI-II	-0.58	0.09	-0.43	-6.56	.001	-0.769	-0.364
			Condition	1.00	1.83	0.03	0.54	.575	-2.771	4.772
			CSW-app	-3.96	1.65	-0.24	-2.41	.009	-6.602	-1.047
			Condition x CSW-app	1.67	2.11	0.08	0.79	.412	-2.539	5.644

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 32

Regression conducted on the reduced sample for whom the manipulation was effective with state global self-esteem (SSES total score) as the outcome variable and BMI and BDI included as covariates (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.46	.21	(Constant)	68.80	1.29		53.28	.001	66.159	71.314
			BMI	-0.75	0.30	-0.23	-2.46	.012	-1.328	-0.188
			BDI-II	-0.56	0.13	-0.40	-4.40	.001	-0.911	-0.218
2	.55	.30	(Constant)	67.90	1.76		38.67	.001	65.174	70.741
			BMI	-0.73	0.30	-0.22	-2.46	.013	-1.311	-0.187
			BDI-II	-0.47	0.12	-0.34	-3.75	.015	-0.847	-0.132
			Condition	3.23	2.53	0.11	1.27	.199	-2.249	7.887
			CSW-app	-4.96	1.51	-0.30	-3.29	.003	-7.405	-1.811
3	.56	.31	(Constant)	67.87	1.76		38.66	.001	65.044	70.653
			BMI	-0.74	0.30	-0.22	-2.48	.014	-1.304	-0.154
			BDI-II	-0.47	0.12	-0.34	-3.82	.014	-0.866	-0.147
			Condition	2.87	2.56	0.10	1.12	.258	-2.913	7.428
			CSW-app	-6.47	2.12	-0.39	-3.05	.002	-9.711	-2.676
			Condition x CSW-app	2.98	2.94	0.13	1.02	.274	-2.152	9.397

Note. BMI = Body Mass Index; BDI-II = Beck Depression Inventory-II; Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 33
Regression conducted on the full sample with state global self-esteem (SSES total score) as the outcome variable and all covariates removed (n = 175)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.35	.12	(Constant)	67.35	1.44		46.88	.001	64.804	69.760
			Condition	1.40	2.06	0.05	0.68	.515	-2.619	5.542
			Appearance CSW	-5.53	1.17	-0.34	-4.74	.001	-7.684	-3.328
2	.35	.12	(Constant)	67.36	1.44		46.73	.001	64.796	69.835
			Condition	1.40	2.07	0.05	0.67	.514	-2.622	5.521
			Appearance CSW	-5.81	1.84	-0.36	-3.16	.001	-8.723	-2.274
			Condition x Appearance CSW	0.47	2.38	0.02	0.20	.826	-4.147	4.965

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 34
Regression conducted on the reduced sample for whom the manipulation was effective with state global self-esteem (SSES total score) as the outcome variable and all covariates removed. (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.39	.15	(Constant)	68.95	1.88		36.66	.001	65.774	71.961
			Condition	2.51	2.71	0.09	0.93	.362	-2.984	7.774
			Appearance CSW	-6.46	1.60	-0.39	-4.04	.001	-8.921	-3.578
2	.39	.15	(Constant)	68.94	1.89		36.53	.001	65.699	71.951
			Condition	2.27	2.74	0.08	0.83	.425	-3.699	7.589
			Appearance CSW	-7.47	2.30	-0.45	-3.24	.001	-10.886	-3.686
			Condition x Appearance CSW	1.96	3.21	0.09	0.61	.493	-3.401	8.728

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Given that condition did not emerge as a significant predictor of state global self-esteem measured post-manipulation, it is possible that significant effects on state appearance or social self-esteem were not found due to the specific measure used or the

effect not being detectable on a post-manipulation measure. To test this, regressions were conducted with post-manipulation state global self-esteem scores from the VAS ($VAS_{self\text{-}esteem}$ Pt 2). On the full sample, BMI was not a significant predictor of post-manipulation state global self-esteem on the VAS, therefore, it was removed from the model, β = 0.06, $t(172) = 0.79$, $p = .446$, 95% CI [-0.36, 0.77]. With BMI removed, Step 1 of the model, which contained depressive symptoms, was significant, $F(1, 173) = 7.75$, $p = .006$, and accounted for 4.3% of the variance. Adding condition and appearance contingent self-worth in Step 2 did not significantly improve the prediction of post-manipulation state global self-esteem scores from the VAS, $F_{change}(2, 171) = 1.14$, $p = .323$, and neither variable significantly contributed to the model. Additionally, adding the interaction term in Step 3 did not improve prediction of post-manipulation state global self-esteem scores from the VAS, $F_{change}(1, 170) = 1.82$, $p = .179$, nor did it significantly contribute to the model. When the analyses were conducted on the reduced sample, neither BMI, β = 0.16, $t(94) = 1.57$, $p = .153$, 95% CI [-0.21, 1.87], nor BDI, β = -0.18, $t(94) = -1.78$, $p = .107$, 95% CI [-0.86, 0.07], significantly contributed to the model, therefore, they were removed. With these variables removed, the same pattern of results was found with respect to appearance contingent self-worth, condition, and the interaction term. Thus, a significant effect of condition on global self-esteem is only seen when a pre-post manipulation change score is used. Statistics for the final models tested on the full and reduced samples are presented in Tables 35 and 36.

Table 35

Regression conducted on the full sample with post-manipulation state global self-esteem scores from the VAS ($VAS_{self\text{-}esteem}$ Pt 2) as the outcome variable and BDI included as a covariate (n = 175)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.21	.04	(Constant)	76.04	1.48		51.38	.001	73.094	78.881
			BDI-II	-0.38	0.14	-0.21	-2.78	.028	-0.704	-0.050
2	.24	.06	(Constant)	73.88	2.06		35.78	.001	70.626	77.014
			BDI-II	-0.37	0.14	-0.20	-2.62	.042	-0.726	-0.055
			Condition	4.45	2.97	0.11	1.50	.135	-1.490	10.180
			CSW-app	0.33	1.74	0.01	0.19	.864	-3.458	4.189
3	.26	.07	(Constant)	73.98	2.06		35.89	.001	70.719	77.126
			BDI-II	-0.39	0.14	-0.21	-2.72	.032	-0.732	-0.071
			Condition	4.41	2.96	0.11	1.49	.145	-1.631	10.086
			CSW-app	-2.37	2.65	-0.11	-0.90	.473	-8.579	3.857
			Condition x CSW-app	4.61	3.41	0.16	1.35	.238	-3.610	11.520

Note. BDI-II = Beck Depression Inventory-II; Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 36
Regression conducted on the reduced sample for whom the manipulation was effective with post-manipulation state global self-esteem scores from the VAS ($VAS_{self\text{-}esteem}$ Pt 2) as the outcome variable (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.20	.04	(Constant)	73.71	2.91		25.31	.001	68.710	78.664
			Condition	8.35	4.19	0.20	1.99	.057	-0.429	16.746
			Appearance CSW	-0.33	2.47	-0.01	-0.13	.908	-6.316	5.239
2	.24	.06	(Constant)	73.70	2.90		25.37	.001	68.623	78.676
			Condition	7.62	4.22	0.19	1.80	.075	-1.011	15.724
			Appearance CSW	-3.42	3.55	-0.14	-0.97	.469	-13.224	5.038
			Condition x Appearance CSW	6.00	4.93	0.18	1.22	.335	-5.755	19.195

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Lastly, to rule out the possibility that any change score would be impacted by condition, an analysis was conducted with change in sleepiness as the outcome variable. The Visual Analog Scale for sleepiness was included to distract from the true nature of the study, and there is no reason to suspect that whether one receives more or less than their expected number of likes on a selfie would impact changes how sleepy women feel. As seen in Tables 37 and 38, condition did not have a significant impact on change in sleepiness.

Table 37
Regression conducted on the full sample with changes in sleepiness as the outcome variable (n = 175)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.14	.02	(Constant)	10.46	2.02		5.18	.001	6.986	14.280
			Condition	0.83	2.90	0.02	0.29	.769	-4.885	6.305
			Appearance CSW	-2.93	1.64	-0.13	-1.79	.079	-6.578	0.127
2	.14	.02	(Constant)	10.43	2.03		5.15	.001	7.002	14.173
			Condition	0.84	2.91	0.02	0.29	.769	-4.868	6.440
			Appearance CSW	-2.02	2.58	-0.09	-0.78	.448	-7.316	2.748
			Condition x Appearance CSW	-1.53	3.35	-0.05	-0.46	.651	-8.510	5.004

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Table 38
Regression conducted on the reduced sample for whom the manipulation was effective with changes in sleepiness as the outcome variable (n = 97)

									Bootstrapped 95% CI	
Step	R	R^2	Variables entered	b	SE b	β	t	sig	Lower	Upper
1	.09	.01	(Constant)	12.08	2.63		4.59	.001	6.954	17.656
			Condition	-2.34	3.78	-0.06	-0.62	.553	-9.890	5.516
			Appearance CSW	-1.00	2.23	-0.05	-0.45	.638	-5.708	2.881
2	.09	.01	(Constant)	12.08	2.64		4.57	.001	6.916	17.758
			Condition	-2.23	3.84	-0.06	-0.58	.584	-10.108	5.902
			Appearance CSW	-0.55	3.23	-0.03	-0.17	.874	-7.338	5.832
			Condition x Appearance CSW	-0.87	4.49	-0.03	-0.19	.854	-10.240	7.846

Note. Condition = 1 (*more than* –) or 0 (*less than* -) expected number of likes; CSW-app = Contingencies of Self-Worth – Appearance Subscale; Condition x CSW-app = interaction between condition and appearance contingent self-worth

Study III Discussion

The aim of Study III was to determine the impact of receiving positive feedback on selfies, in the form of likes, on self-esteem. Rather than assessing the impact of

receiving likes versus not receiving any likes, the impact of receiving more or less likes on a posted selfie than expected on self-esteem was investigated. Participants were asked to read and imagine themselves in a vignette in which they either received 50% more or 50% less than their expected number of likes. Expected number of likes was obtained via self-report in Study I, on a selfie posted on Instagram. Participants reported on their state global self-esteem pre- and post- manipulation on a visual analogue scale. They also completed a questionnaire assessing state appearance and social self-esteem post-manipulation only. It was hypothesized that women higher in appearance contingent self-worth, which was measured during Study I, would be more likely to attribute their number of received likes to their appearance (Hypothesis 8). Additionally, it was hypothesized that whether women received more or less than their expected number of likes would impact changes in global state self-esteem from pre-manipulation to post, such that individuals in the less than expected number of likes condition would experience decreases in global state self-esteem from pre- to post-manipulation. It was also hypothesized that these women in the less than expected number of likes condition would report lower state appearance and social self-esteem post manipulation relative to women in the more than expected number of likes condition (Hypothesis 9). Across outcome variables, condition was expected to interact with appearance contingent self-worth, such that women higher in appearance contingent self-worth would be more strongly impacted by receiving more or less than their expected number of likes than would women lower in appearance contingent self-worth (Hypothesis 10).

Consistent with Hypothesis 8, women higher in appearance contingent self-worth were more likely to attribute their number of received likes on a posted selfie to their

appearance than were women lower in appearance contingent self-worth. This finding was specific to clear and explicit appearance-based attributions. When considering less specific appearance based responses, there was a non-significant difference in the number of women higher or lower in appearance contingent self-worth who attributed their number of received likes to appearance. Given that likes can indicate relational value (Gao, 2016), this finding provides further evidence that women are more likely to attribute social inclusion/rejection to a self-worth domain in which they are highly invested, in this case appearance.

In terms of Hypothesis 9, receiving more or less likes than expected only impacted changes in global self-esteem, as measured by a visual analog scale, pre- and post-manipulation. Review of group means indicated that women assigned to the less than expected number of likes condition did not experience much change in their self-esteem, whereas women assigned to the more than expected condition experienced a slight increase in their self-esteem. Thus, it appears that receiving more likes than expected caused women to experience an increase in state global self-esteem, but that receiving an less likes than expected did not negatively impact self-esteem, as hypothesized. These results are consistent with findings from Blackhart, Nelson, Knowles, and Baumeister's (2009) meta-analysis which indicated that "experimental manipulations of rejection may have little to no effect on self-esteem, whereas acceptance bolsters self-esteem (p. 297)." Receiving more or less likes than expected on a selfie could be interpreted as acceptance or rejection, respectively. Blackhart et al. (2009) postulate that the lack of impact of rejection on self-esteem in experimental studies is due to defensiveness. That is, participants are able to find ways to protect their self-esteem

during isolated research events in which they experience rejection, but are open to enhancing their self-esteem through acceptance. Therefore, despite the findings of this study, it is possible that women's self-esteem can be negatively impacted by the receipt of a low number of likes on a selfie.

Consistent with Blackhart et al (2009)'s proposition that individuals are defensive to protect their sense of self-worth in response to experimental rejections, over 40% of participants assigned to the less-than-expected number of likes condition reported that they received a number of likes that was commensurate with their expectations on the manipulation check. Further, several participants in the present study provided responses to the attribution question that could be interpreted as self-protective. For example, some participants indicated that they expected to receive more likes later in the day or felt that their number of likes was understandable given the time of day. Participant 108 wrote "A few hours have gone by. People are beginning to start their day; not everyone is up early every morning. As the day progresses, I expect I would get more likes." Similarly, participant 249 wrote "I probably got that number of likes because since it may be early still not many people are up or checked their Instagram updates yet, therefore only 15 people who were up liked it." Thus, the time of day and the relatively short duration between the time the photo was posted and when the individual saw their number of received likes may have served as defensive attributions and therefore reduced the impact of receiving less likes than expected on self-esteem. Consistent with this proposition, Participant 79 wrote "I think I got that number of likes on my picture because I looked good in the picture and people like me. :) I usually get around 250 likes on my selfies, however, in the hour that I was in class, 130 likes isn't bad. If this was the number of

likes that I ended up getting, I probably wouldn't be very happy." Thus, it is possible that decreases in state self-esteem would have been found if the vignette was designed to reduce opportunities for individuals to protect their self-esteem via defensive responding. For example, the vignette could have indicated that likes were checked at the end of the day when participants' number of received likes would be closer to its maximum. Indeed, Crocker et al. (2003) indicated that decreases in self-esteem are only to be expected when an individual cannot discount the threat to their self-esteem with "defensive responses" (p. 894).

Given the potential use of defensive responding for self-protection, decreases in state self-esteem also may have been found in response to receiving less likes than expected on a posted selfie, if self-esteem were to be measured with an implicit measure. Implicit self-esteem is defined as an "evaluation of the self that occurs unintentionally and outside of awareness," whereas explicit self-esteem "is an individual's conscious, deliberate self-evaluation" (Jordan, Spencer & Zanna, 2003, p. 122). People's level of explicit and implicit self-esteem can differ. For example, individuals with fragile self-esteem tend to have high trait explicit self-esteem with low trait implicit self-esteem (e.g., Jordan et al., 2003; Kernis, Lakey, & Heppner, 2008). Since implicit self-esteem is thought to be more genuine and less susceptible to protective factors that can impact reporting on explicit measures, it is possible that lower implicit self-esteem could be found even in the presence of high explicit self-esteem following a self-esteem threat. This pattern of results would indicate defensive responding. However, there is limited support for the use of this method for determining state defensive responding, as it has been employed in very few studies (e.g., Boersma, 2017; Wong-Padaoongpatt, Zane,

Okazaki, & Saw, 2017). Most studies employ either implicit or explicit state self-esteem measures, but not both. Further, some researchers have found that implicit self-esteem increases, rather than decreases, following threats to self-esteem and refer to this as "implicit self-esteem compensation" (Rudman, Dohn & Fairchild, 2007, p. 798). Therefore, implicit measures of self-esteem also may be susceptible to defensiveness, and although the inclusion of implicit measures could be helpful in determining the impact of receiving more or less likes than expected on state self-esteem, they are not necessarily a reliable means of determining defensive responding or the true impact of likes on state self-esteem.

In terms of state appearance and social self-esteem as outcome variables, there were no significant effects of condition on either variable. State appearance and social self-esteem were measured via a questionnaire administered post manipulation. Therefore, the measurement of these variables differed from the measurement of global self-esteem in two ways; the latter was assessed pre- and post-manipulation using visual analog scales, rather than with questionnaires. Supplementary analyses in which the impact of condition on state global self-esteem measured post manipulation, with both the SSES total score and the post-manipulation visual analog scale, did not yield significant results. Therefore, the fact that state appearance and social self-esteem only were measured after the manipulation may have contributed to the non-significant findings, as significant findings were found with global self-esteem when using the pre-post change score. Moreover, obtaining change scores from visual analog scales, rather than questionnaires, may have allowed for the detection of a significant change in state global self-esteem, as visual analog scales are considered to be more sensitive to within-

participant changes (Mabe et al., 2014). Therefore, it would be beneficial to reassess the impact of receiving more or less likes than expected on a posted selfie on state appearance and social self-esteem, using an experimental design with pre- and post-manipulations measures. Although it seems that a truly significant effect may be more likely to emerge using visual analog scales pre- and post, it would be interesting to use both visual analog scales and questionnaires to determine the impact of receiving more or less likes than expected on a selfie on appearance and social self-esteem. Using both measures would provide further information as to whether visual analog scales are indeed more sensitive to changes than are questionnaires.

Although condition did not significantly predict post-manipulation state appearance and social self-esteem, appearance contingent self-worth did. More specifically, women higher in appearance contingent self-worth reported lower state appearance and social self-esteem after reading a vignette regardless of whether this vignette indicated that they received more or less likes than expected on a posted selfie. The relationship between appearance contingent self-worth and state appearance and social self-esteem post manipulation was not of interest in this study, but the main effect was entered into the regressions, as this is suggested when testing an interaction (Cohen et al. 2003). Generally, there tends to be a negative association between appearance contingent self-worth and self-esteem (Crocker et al., 2003) and it seems that this relationship holds regardless of whether an individual receives more or less likes than expected on a selfie, given the lack of a significant interaction found in this study.

Further, Hypothesis 10 was not confirmed, regardless of the outcome measure used. Thus, the impact of receiving more or less likes on a post selfie on self-esteem was

not moderated by women's level of appearance contingent self-worth. However, it is worth noting that given that our current social environment continues to emphasize the way women look, appearance impacts many women's sense of self-worth (Buote, Wilson, Strahan, Gazzola, & Papps, 2011). Consistent with norms for the appearance subscale of the Contingencies of Self-Worth Scale (Crocker et al., 2003b), the majority of women in this study scored fairly high in appearance contingent self-worth as evidenced by the negative skew on the appearance subscale of the CSWS and the mean score on this measure, which was greater than 5 on a scale that goes from 1 to 7. Therefore, the moderation analyses, as well as the analysis for Hypothesis 9, really were comparing women high in appearance contingent self-worth to women who were extremely high, rather than women who were truly high versus low on this dimension.

Taken together, the results of this study indicate that receiving more likes than expected on a selfie can result in state increases in global self-esteem. Receiving an insufficient number of likes could have negative impacts on state self-esteem given previous qualitative research indicating that individuals begin to wonder about potential appearance flaws when they do not receive many likes on their selfies (Porch, 2015), but further research is required given potential defensive responding by participants in the present study.

Limitations and Future Directions

There were a few limitations to the present study. First, the manipulation may not have been robust enough, as over 40% of participants indicated that they received their expected number of likes despite none of them receiving this number. Thus, receiving 50% more or less likes than expected may not be a marked enough difference. It is also

possible that the manipulation was not very effective because the number of likes presented in the vignettes was based upon participants' number of expected likes more generally, and not in the specific situation presented in Study III. That is, it is possible that women have different expectations for the number of likes they hope to receive on each selfie posted and that this was not accounted for as the item in Study I inquired about expected number of likes on a selfie more generally. For example, women may hope to receive more likes on a selfie in which they think they look especially good. Regardless, whether the manipulation was effective did not seem to impact the results, given that the pattern of result did not differ regardless of whether the analyses were conducted on the full sample or only individuals for whom the manipulation was considered to be effective. There may be more effective ways to manipulate the number of likes one receives on a selfie in future research. For example, vignettes could be blunter and state "you opened Instagram and saw that you received more/less likes than you expected." This was considered during the creation of this study, but personalized vignettes with specific numbers of likes based on sought gratifications were thought to be more realistic to readers and less likely to result in hypothesis guessing. That is, participants may have been more likely to realise that the investigator was interested in the impact of receiving more or less likes, if this was explicitly written, and it would have been difficult to assess the impact of this on the data. However, the blunter approach may be a more effective manipulation, given that the personalized approach was only effective for approximately 55% of the sample.

In addition, instead of only considering individuals' expected number of likes, the number of likes an individual receives relative to their friends could be examined in

future studies. Burrow and Rainone (2017, n = 102) asked undergraduate students to take a selfie, and then told them that it would be shown to others who could like it. Five minutes later, participants were informed that they either received the average number of likes compared to other participants assessed during pilot testing, more than the average number of likes received by others or less likes than other participants. Then, they completed a measure of global self-esteem. Participants in the above average condition reported higher global self-esteem than those in the less than average number of likes and average number of likes conditions. Thus, the impact of likes on self-esteem may not only depend on sought gratifications, but also social norms.

It appears that women may compare the number of likes they receive on selfies to the number of likes received by others. Comparing one's number of received likes to that of others could actually be a form of appearance-based social comparison given that likes can indicate approval of the pictured person's appearance. Comparing number of received likes also may be a means of comparing one's level of social acceptance relative to their peers given that likes can indicate relational value. However, it would be difficult to distinguish between comparing social acceptance and appearance given that the two are highly related among women for whom appearance is important. Research indicates that women do in fact engage in appearance comparisons while online (Fardouly, Pinkus, & Vartanian, 2017). Greater frequency of appearance comparisons tends to be negatively associated with self-esteem (Schaefer, 2017; Schaefer & Thompson, 2014; Vogel et al., 2014), and upward social comparisons and appearance-based comparisons have been found to mediate the negative relationships between frequency of Facebook use and trait

self-esteem (Vogel et al., 2014) and Facebook use and body image concerns (Fardouly & Vartanian, 2015), respectively.

Therefore, the impact on self-esteem of receiving more or less likes than one's friends could be affected by the trait tendency to engage in appearance comparisons and actual engagement in appearance comparison, and this could be the subject of future research. For example, a moderated mediation model could be tested in which the act of actually comparing one's number of likes to the number of likes received by others is tested as a mediator of the relationship between receiving more or less likes than others and state self-esteem. Further, trait tendency to engage in appearance comparisons could be assessed as a moderator of the relation between receiving more or less likes than one's friends and state engagement in the comparison of likes. That is, after receiving likes on a selfie, women with a higher trait tendency to compare their appearance to that of others may be more likely than women low in this tendency to compare their number of received likes to the number of likes received by others. Those who actually compare their number of received likes with others might experience lower state self-esteem if they receive less likes than their peers. Consistent with this proposition, Vogel, Rose, Okdie, Eckles, and Franz (2017, $n = 120$) found that participants who were asked to view a friend's Facebook profile and evaluate it had lower state self-esteem than individuals instructed to look at their own profile or engage in an unrelated task involving reading cell phone reviews. Although participants were not explicitly instructed to compare themselves to the friend whose profile they viewed, the researchers presumed this would occur. Among the individuals who viewed a friend's profile, those who had higher

tendency to engage in social comparisons experienced lower state self-esteem than those with lower tendency to compare.

Another limitation to the present study was the focus on quantity of likes alone. Scissors et al. (2016) found that 42.5% of Facebook users cared more about who likes their posts (e.g., photos, check-ins, weblinks, status updates) than the actual number of likes they receive. Thus, whether the source of received likes on selfie differentially impacts self-esteem could be assessed in future research.

Lastly, aside from limitations associated with the manipulation, it is of note that the finding concerning attribution of likes also is limited. Participants were asked why they thought they received their number of received likes in the vignette, which reflected a very specific situation. Thus, the findings of the present study do not provide information about how women higher or lower in appearance contingent self-worth interpret likes on their selfies more generally. As mentioned previously, likes do not have a precise meaning (e.g., Gao, 2016; Scissors et al., 2016) and can indicate a range of messages such as care/support for the person posting the photo, actually liking the photo, liking the caption, etc. Thus, the impact of individual factors, such as contingencies of self-worth, on interpretation of likes on photos more generally could be the subject of future research.

CHAPTER 5

Overall Summary and Conclusions

The aim of this dissertation was to better understand what motivates women's selfie posting on social media, and the impact of receiving feedback on these photographs on self-esteem, using media- and psychology-based theories including: Perloff's (2014a)

Transactional Model of Social Media and Body Image Concerns (Perloff, 2014a), the Uses and Gratification theory (U&G; Katz, Blumer, & Gurevitch, 1974; Ruggiero, 2000), Leary et al.'s Sociometer Theory of Self-Esteem (Leary, 2001; Leary, 2005; Leary & Baumeister, 2000; Leary & Downs, 1995; Leary, Tambor, Terdal & Downs, 1995), and Crocker and Wolfe's (2001) Contingencies of Self Worth theory. The combination of the latter two theories of self-esteem also was used to make hypotheses about women's motivation for selfie posting and the impact of receiving feedback on posted selfies on women's self-esteem. Taken together, these theories suggest that people work to enhance or maintain their self-esteem through domains that they perceive as being important determinants of social inclusion (MacDonald et al., 2003; O'Driscoll & Jarry, 2015).

The appearance domain was of particular interest in the present research, such that appearance contingent self-worth was a key variable in all of three studies conducted here. In the Transactional Model of Social Media and Body Image Concerns, Perloff (2014a) suggested that the importance of appearance for self-worth contributes to women's social media use. Appearance also seemed pertinent to the act of posting selfies on social media given that selfies are photos of the self and could be a way to show one's appearance to others. Further, findings from qualitative studies indicate that people often interpret feedback on these photos as being relevant to their appearance (e.g., Porch, 2015). The hypotheses underlying this research were that women higher in appearance contingent self-worth would have a stronger desire for positive feedback in this domain, to enhance or maintain their self-esteem in a contingent domain, and that this would result in more frequent selfie posting. In addition, it was hypothesized that women higher in appearance contingent self-worth would be more strongly impacted by the feedback

that they received on their selfies than women lower in appearance contingent self-worth given that this feedback would be in a domain of perceived importance.

Three studies were conducted, all with female undergraduate students from a university in Southern Ontario (see Appendix A for summary of findings). Thus, the results are specific to young women and cannot necessarily be generalized to female adolescents, who also frequent users of photograph-based social media platforms. The results of Study I indicated that the relationship between the extent to which women based their self-worth on their appearance and the frequency with which they post selfies on social media was not significant. However, there was a significant indirect relationship through the desire to obtain positive appearance feedback. Thus, it appears that women higher in appearance contingent self-worth have a stronger desire for appearance feedback and as a result post selfies more frequently, but these findings are based on correlational data and causal conclusions cannot actually be made. The desire to obtain positive appearance feedback, however, did not mediate the relation between appearance contingent self-worth and the proportion of photographs posted in the past two months that were selfies. Although women may post selfies more frequently in an attempt to receive positive appearance feedback, they do not necessarily post more selfies than other types of photographs. Lastly, although photograph editing was not a focus in Study I, exploratory analyses revealed that there was a significant positive relationship between appearance contingent self-worth and the extent to which women edit photographs of themselves, and that this relation also was mediated by the desire for appearance feedback. Thus, it seems that editing photographs of oneself is more directly related to

appearance contingent self-worth than is the act of posting selfies, and is an area for further research as indicated in the discussion section of Study I.

The impact of receiving feedback on selfies, in the form of likes and/or appearance-based comments, was the focus of Studies II and III. In Study II, women's Instagram accounts were accessed to obtain information about the average proportion of their followers who liked their selfies and provided appearance-based comments over two months. This information was used in conjunction with self-report measures to determine whether the amount of feedback received was associated with women's trait self-esteem and appearance satisfaction over that time period. However, due to difficulties with recruitment, the analyses were significantly underpowered, meaning that there was high potential for Type II errors, also referred to as false negatives. Therefore, limited conclusions could be drawn from Study II. However, one finding that emerged was that there was a potential significant interaction between appearance contingent self-worth and the average proportion of followers who liked an individual's selfies on global self-esteem. This interaction suggests that the impact on women's global self-esteem of receiving likes on selfies may vary depending on the extent to which they base their self-worth on their appearance. Visual inspection of the simple slopes suggests that among women lower in appearance contingent self-worth, those who received likes on their selfies from a higher proportion of their followers exhibit slightly higher trait self-esteem than those who received likes from a lower proportion of their followers. Conversely, women higher in appearance contingent self-worth who receive likes from a higher proportion of their followers exhibit slightly lower trait self-esteem than women high in appearance contingent self-worth who received likes from a lower proportion. However,

conclusions about this cannot be made as there was insufficient power to make meaningful interpretations of the simple slopes analyses. That is, the simple slopes for both women higher and lower in appearance contingent self-worth were not significantly different from zero, which suggests that receiving a higher or lower proportion of likes was not associated with differences in global trait self-esteem. Thus, replication with a larger sample would be necessary to draw conclusions, and could be interesting given that the pattern was contrary to what would be expected. Receiving a higher proportion of likes on selfies was expected to be associated with higher self-esteem among women higher in appearance contingent self-worth, given that they would be receiving more positive feedback in a domain of perceived importance. However, it may be the case that the self-esteem of women higher in appearance contingent self-worth is not raised by receiving likes on their selfies from a higher proportion of their followers on average as they may not only need more likes, but also need to receive likes on a more frequent basis in order to enhance their self-esteem. Recall that although the average proportion of followers who liked all selfies posted over two months was computed, most participants only posted one or two photographs over the two-month span. Thus, a greater average proportion of likes received may not have been sufficient to affect the self-esteem of women who place high importance on their appearance given the low frequency with which appearance feedback, in the form of likes on selfies, was received.

In Study III, an experimental design was used to determine whether receiving more or less likes than expected on a posted selfie affected women's state appearance and social self-esteem and resulted in changes in women's global state self-esteem. The results indicated that receiving more or less likes than expected on a selfie affected

changes in global self-esteem, such that women who received more likes than expected experienced increases in state global self-esteem. However, contrary to expectations, the self-esteem of women who received less likes than expected was relatively unchanged. The lack of negative impact of receiving less likes than expected on self-esteem may be due to defensiveness. Appearance contingent self-worth was assessed as a moderator of these potential effects, but was not significant. However, appearance contingent self-worth did affect the interpretation of women's number of received likes. Women higher in appearance contingent self-worth were more likely to attribute their number of received likes to their appearance than were women lower in appearance contingent self-worth.

Taken together, the findings of this research suggest that although women higher in appearance contingent self-worth may have a stronger desire for appearance feedback and therefore post selfies more frequently, selfie posting may not always be as much of an appearance-focused act as initially thought. Both the frequency of selfie posting and the proportion of posted photos that were selfies were not directly related to the extent to which women base their self-worth on their appearance. Moreover, in Studies II and III, feedback received on selfies did not impact women's appearance self-esteem or appearance satisfaction even among women who were higher in appearance contingent self-worth. However, this may be due to methodological limitations as described above. Regardless, research on the uses and gratifications associated with posting selfies on social media indicates that posting selfies to show one's appearance and/or gain self-confidence is only one potential motivator underlying the posting of these photos (Alblooshi, 2015; Sung et al., 2016). Selfies also are used to document special occasions,

communicate with others, and pass time (Alblooshi, 2015; Sung et al., 2016). Therefore, the sought gratification for each selfie posted by an individual could differ, and women may not always be posting photos of themselves in the hopes of obtaining feedback to affirm their appearance. As mentioned in Appendix N, some women post selfies even when the like function is removed. For example, women sometimes post selfies on their Instagram "story," which is a function in Instagram where users can post photos or videos that only appear on an individual's profile for 24 hours. There is no like function on these posts, although viewers can message the poster directly to comment on the 'story.'

In addition to conceptualizing selfie posting as an appearance-focused act, Studies II and III relied on the assumption that women care about the number of likes they receive on their selfies. Further, it was assumed that women's perception of their number of received likes depended on their number of followers. Therefore, in Study II, the proportion of potential likes that were received based on an individual's number of followers was used to quantify likes. Further, in Study III, it was assumed that participants would have differing numbers of expected likes given that they have different numbers of followers, and the manipulations were individualized based on participants' self-reported number of expected likes. However, participants were not asked for the rationale for their reported number of expected likes. Thus, it is unclear as to whether this actually depended on number of followers. Findings from other research studies suggest that people also may be impacted by the quantity of likes received relative to that of their peers (Burrow & Rainone, 2017). Thus, participants' reported number of expected likes may have accounted for the number of likes typically received by their friends in addition to their number of followers. In the future, researchers could ask

participants about what determines their sought number of likes when they post photos on social media, and investigate the impact of individual factors, such as social comparison orientation. For example, compared to women lower in social comparison orientation, women higher in social comparison orientation may care more about their number of received likes relative to their peers than in relation to their number of followers. In addition, the source of likes, in addition to quantity of likes, could be considered given research findings suggesting that people care about the source of their likes (Scissors et al., 2016). For example, although the findings of Study III indicated that receiving more likes than expected causes increases in state global self-esteem, it is unclear whether this effect would still be found if an important person, such as a woman's romantic partner or best friend, was not one of the individuals who liked the photo. Taken together, it appears that the impact of likes received on selfies can depend on several different factors, and that it would be beneficial to consider the impact of the interplay between these factors, rather than just the quantity of likes on self-esteem in future research.

Given the presence of a selfie phenomenon, and the burgeoning body of research on selfies, this specific type of photograph of the self was the focus of this dissertation. Therefore, the findings are limited to the posting of self-taken photographs of only the self and the impact of feedback on these specific images. However, women also can display their appearance on social media by posting usies, photographs of themselves that are taken by others, or video clips and may do so to obtain appearance feedback. Therefore, the effects of feedback on all posted images/videos including the self on self-esteem could be investigated in future research, and may be more relevant given the low frequency of selfie posting reported and observed in Studies I and II, respectively.

However, something to be considered is that likes or comments may not always pertain to the posted photograph/video itself. While coding accounts for Study II, it was noted that people sometimes commented on the caption rather than the photograph itself. For example, if a woman posted a selfie and the caption indicated that it was her birthday, the received comments included a combination of comments about the photograph itself and happy birthday wishes.

Lastly, although the results of Studies II and III did not suggest that receiving likes form a low proportion of one's followers or receiving less likes than expected negatively impacts self-esteem, respectively, it appears that going on social media to post photographs of oneself to enhance or maintain self-esteem may result in unintended negative consequences. In his Transactional Model of Social Media and Body Image Concerns, Perloff (2014a) suggested that women are exposed to perceived pressures and engage in "mediating processes," such as social comparison, while using social media to obtain reassurance about their physical and social attractiveness. This is hypothesized to result in negative "social media effects" such as body dissatisfaction and negative affect (Perloff, 2014a). Indeed, social media use has been associated with a number of negative outcomes including body dissatisfaction (de Vries, Peter, Nikken, & de Graaf, 2016; Fardouly and Vartanian, 2015), internalization of the thin ideal (Tiggemann & Slater, 2013), and low self-esteem (Mehdizadeh, 2010; Vogel, Rose, Roberts, & Eckles, 2014). Moreover, consistent with Perloff's (2014a) hypothesis, engaging in comparisons has been found to mediate the negative relationships between frequency of Facebook use and trait self-esteem (Vogel et al., 2014) and Facebook use and body image concerns (Fardouly & Vartanian, 2015), respectively. Further, the negative impacts of exposure to

social media photos promoting health and fitness, referred to as #fitspiration, on body dissatisfaction (Tiggemann & Zaccardo, 2015) and appearance self-esteem (Dignard, 2017) also have been found to be mediated by appearance comparisons. Therefore, although posting selfies may not be harmful to self-esteem, engagement in social comparison while using social media more generally may negatively impact body satisfaction and/or self-esteem.

Given that descriptive information from Studies I and II suggest that women spend multiple hours on social media each day, it is possible that they engage in comparisons at some point during their social media use and that this may negatively impact their self-esteem and body image. Therefore, social media literacy interventions may be helpful to mitigate the potential negative outcomes associated with the use of social media to obtain positive appearance feedback. Indeed, Tamplin, McLean, and Paxton (2018) found that the body satisfaction of women with high social media literacy was not impacted by exposure to appearance-ideal social media images, whereas women with low social media literacy experienced decreases in body satisfaction. At present, there is limited research on the effectiveness of social media interventions, but the current research seems promising. McLean, Wertheim, Masters, and Paxton (2017, $n = 101$) conducted a pilot study to test a social media literacy intervention among adolescent girls. The intervention consisted of three 50-minute lessons that covered topics such as reducing engagement in appearance comparisons on social media, reducing appearance-commenting on peers' posts, and gaining awareness of the digital manipulation of social media images. Significant time by group interactions were found, such that the group who received the intervention demonstrated improvements in body esteem, dietary

restraint, and realism skepticism, whereas the control group did not exhibit any improvements. Therefore, interventions based on these topics could be created for, and tested among, young adults as they spend a large proportion of their time on social media each day.

If this were to be the case, it may also be helpful to include content on media creation and the provision of feedback (i.e., likes or comments) in interventions. Most media literacy interventions focus on individuals as consumers of media content. However, social media involves both the consumption and creation of content given that it is sustained by user generated content. Thus, this key component of social media use should be included in interventions. For example, knowing that peers may be actively seeking affirmation of their physical and social attractiveness when they post a selfie may encourage women to like and/or comment on the selfies of those whom they want to befriend. In addition, it may be helpful for women to learn information that could help them to overcome any potential barriers to selfie posting. Both past research and the descriptive information obtained in Studies I and II indicate that women take selfies more frequently than they post them. Thus, it is possible that there are women who place importance on their appearance for self-worth and want to post selfies, but do not do so due to potential barriers, such as fear of negative appearance evaluation. While selfie-posting should not be relied upon as a means of maintaining or enhancing self-worth, these barriers may prevent women from engaging in a behaviour that could result in the receipt of positive feedback from others and subsequently enhance their state global self-esteem. Therefore, it may be helpful for women to learn that most women who post selfies receive likes on their photograph (Porch, 2015) and that it is unlikely that they will

be negatively impacted by the receipt of less likes than expected, especially if they are able to rationalize their number of received likes, as was observed in Study III.

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APPENDICES

Appendix A
Summaries of Findings from Studies I, II, and III

Study I

	Hypothesis	Analyses	Finding
Hypothesis 1	App-CSW will be positively correlated with the frequency with which women post selfies and the proportion of the photos women post on social media that are selfies.	Bootstrapped correlation	**Hypothesis 1was not confirmed.** The correlation was non-significant.
Hypothesis 2	The correlations between App-CSW and frequency of selfie-posting and proportion of selfies women post on social media will be stronger than the correlations between proportion of selfies posted and other contingencies of self-worth.	Lee and Preacher's (2013) calculation for the test of the difference between two dependent correlations	**Hypothesis 2 was not confirmed.** The correlations between App-CSW and frequency of selfie posting and proportion of selfies posted that were selfies were not significantly stronger than the correlations among the latter two variables and the other contingencies of self-worth.
Hypothesis 3	The relations between App-CSW and the frequency of selfie-posting and proportion of selfies women post will be mediated by the desire to obtain positive feedback on their appearance	Mediation using Preacher and Hayes' method	**Hypothesis 3 was partially supported.** The indirect effect of appearance contingent self-worth on frequency of selfie posting through the desire to obtain positive appearance feedback was significant, but the indirect effect on proportion of posted photos that were selfies was not significant.
Supplementary analysis	Does trait self-esteem moderate the a path of the mediations in H2 and H3?	Moderated mediation using Preacher and Hayes' method	**Trait self-esteem did not moderate the relation between App-CSW** and the desire for appearance feedback in any of the mediation analyses.
Exploratory Analyses	Is there a significant relationship between App-CSW and the proportion photos posted that are selfies and/or usies? Is the relationship mediated by the desire for positive appearance feedback.	Bootstrapped correlation & Mediation using Preacher and Hayes method	**The correlation was not significant.** There was a **significant indirect effect of App-CSW on the proportion of posted photos that were selfies and/or usies through the desire for positive appearance feedback.**
	Does the desire for positive appearance feedback mediate the relation between App-CSW and the extent to which women edit photos of themselves?	Mediation using Preacher and Hayes' method	There was a positive significant correlation between App-CSW, and **the relationship between these two variables was mediated by the desire to obtain positive appearance feedback**

Note: App-CSW = appearance-contingent self-worth

Study II

	Hypothesis	Analyses	Finding
Hypothesis 4	The average proportion of likes received on women's selfies will be associated with trait SE and appearance satisfaction; greater average proportion of likes will be related to higher SE and appearance satisfaction.	Multiple regression	**Hypothesis 4 was not confirmed for either outcome variable.**
Hypothesis 5	App-CSW self-worth will moderate the relations between average proportion of likes received and trait SE and appearance satisfaction; the positive relations between average proportion of likes and trait SE and appearance satisfaction will be stronger among women who are high in App-CSW than for those who are low.	Multiple regression	**Hypothesis 5 was not confirmed for appearance satisfaction, but there was a significant interaction between App-CSW and average proportion of likes in predicting self-esteem.**
Hypothesis 6	The average proportion of positive-appearance related comments received on selfies posted on social media will predict trait SE and appearance satisfaction; a greater average proportion of positive comments will be associated with higher trait SE and appearance satisfaction	Multiple regression	**Hypothesis 6 was not confirmed for either outcome variable.**
Hypothesis 7	App-CSW will moderate the relationships between average proportion of positive appearance-related comments received and trait SE and appearance satisfaction; positive relationships between the average proportion of comments and trait SE and appearance satisfaction will be stronger among women who are high versus low in App-CSW	Multiple regression	**Hypothesis 7 was not confirmed for either outcome variable.**

Note: App-CSW = appearance-contingent self-worth

Study III

	Hypothesis	Analyses	Finding
Hypothesis 8	Women higher in App-CSW will be more likely than women lower in App-CSW to attribute the number of likes they received to their appearance.	Chi-square	**Hypothesis 8 was confirmed.** Women higher in App-CSW were more likely to attribute their number of received likes on a posted selfie to their appearance than women lower in App-CSW
Hypothesis 9	There will be a main effect of condition on changes in global state self-esteem from pre-manipulation to post, and on state social and appearance self-esteem post manipulation. Individuals in the less-than-expected number of likes condition will experience decreases in global state self-esteem and lower state appearance and social self-esteem post manipulation than those in the more-than-expected condition.	Multiple regression	**Hypothesis 9 was partially confirmed.** Condition only had a significant impact on changes in global self-esteem. Women assigned to the less-than-expected number of likes condition did not experience much change in their self-esteem, whereas women assigned to the more-than-expected condition experienced slight increases in their self-esteem
Hypothesis 10	Condition will interact with App-CSW (higher or lower) to predict changes in global state self-esteem from pre-manipulation to post, and on state social and appearance self-esteem post manipulation. Women higher in App-CSW will be more strongly impacted by the number of likes received than those who are lower in App-CSW.		**Hypothesis 10 was not confirmed for any of the outcome variables.**

Note: App-CSW = appearance-contingent self-worth

Appendix B

Study 1 Screening Questions

1. What is your biological sex? [male/**female**/intersex/other]*
2. Have you had an active profile/account on a social media platform that allows you to post photos (e.g., Facebook, Twitter, Instagram) for at least two months? [**yes**/no]
3. Do you have a cell phone with a front-facing camera or a webcam? [**yes**/no]

**This question is a standard question included in the participant pool screening questionnaire. Therefore, the wording was not determined by the primary investigator*

Appendix C

Demographics Questionnaire

Age: _____ Sex: _____

Marital status:
Married/common law ☐ Divorced/separated ☐ Single ☐ Widowed ☐

Number of children: 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ more than 4 ☐

What is your ethnic background?

Caucasian	☐	South Asian	☐	Hispanic	☐
African-Canadian	☐	European	☐	Native-Canadian	☐
East Asian	☐	Arab	☐		

Other (please specify): _____

School enrolment: Full time student ☐ Part time student ☐

Years in University:

First year	☐	Third year	☐	More than 4 years	☐
Second year	☐	Fourth year	☐		

Including your current psychology course, how many psychology courses have you taken so far? _____
What is/are your major(s)? _____
What is/are your minor(s)?
_____

If currently employed, your occupation is:

Full time	☐	Clerical	☐	Labourer	☐
Part time	☐	Professional	☐	Self-employed	☐
		Owner/manager	☐	Unemployed	☐

Other: _____

Mother or guardian's occupation:

Full time	☐	Clerical	☐	Labourer	☐
Part time	☐	Professional	☐	Self-employed	☐
		Owner/manager	☐	Unemployed	☐

Other: _____

Father or guardian's occupation:

Full time	☐	Clerical	☐	Labourer	☐
Part time	☐	Professional	☐	Self-employed	☐
		Owner/manager	☐	Unemployed	☐

Other: _____

Appendix D

Photo Manipulation Scale

(McLean, Paxton, Wertheim, & Masters, 2015)

Instructions: For photos of yourself that you post online or share via mobile, how often do you do the following to make the photos look better?

	Never	Rarely	Sometimes	Often	Always
1. Get rid of red eye	1	2	3	4	5
2. Make yourself look larger	1	2	3	4	5
3. Highlight facial features, e.g., cheekbones or eye colour/brightness	1	2	3	4	5
4. Use a filter to change the overall look of the photo, e.g., making it black and white, or blurring and smoothing images	1	2	3	4	5
5. Make yourself look skinnier	1	2	3	4	5
6. Adjusting the light/darkness of the photo	1	2	3	4	5
7. Edit to hide blemishes like pimples	1	2	3	4	5
8. Whiten your teeth	1	2	3	4	5
9. Make specific parts of your body look larger or look smaller	1	2	3	4	5
10. Edit or use apps to smooth skin	1	2	3	4	5

Appendix E

Contingencies of Self Worth Scale

(Crocker, Luhtanen, Cooper, & Bourvrette, 2003b)

INSTRUCTIONS: Please respond to each of the following statements by circling your answer using the scale from "1 = Strongly disagree" to "7 = Strongly agree." If you haven't experienced the situation described in a particular statement, please answer how you think you would feel if that situation occurred.

		Strongly Disagree	Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Agree	Strongly Agree
1	When I think I look attractive, I feel good about myself	1	2	3	4	5	6	7
2	My self-worth is based on God's love	1	2	3	4	5	6	7
3	I feel worthwhile when I perform better than others on a task or skill	1	2	3	4	5	6	7
4	My self-esteem is unrelated to how I feel about the way my body looks	1	2	3	4	5	6	7
5	Doing something I know is wrong makes me lose my self-respect	1	2	3	4	5	6	7
6	I don't care if other people have a negative opinion of me	1	2	3	4	5	6	7
7	Knowing that my family members love me makes me feel good about myself	1	2	3	4	5	6	7
8	I feel worthwhile when I have God's love	1	2	3	4	5	6	7
9	I can't respect myself if others don't respect me	1	2	3	4	5	6	7
10	My self-worth is not influenced by the quality of my relationships with my family members	1	2	3	4	5	6	7
11	Whenever I follow my moral	1	2	3	4	5	6	7

	principles my sense of self-respect gets a boost							
12	Knowing that I am better than others on a task raises my self-esteem	1	2	3	4	5	6	7
13	My opinion about myself isn't tied to how well I do in school	1	2	3	4	5	6	7
14	I couldn't respect myself if I didn't live up to a moral code	1	2	3	4	5	6	7
15	I don't care what other people think of me	1	2	3	4	5	6	7
16	When my family membes are proud of me, my sense of self-worth increase	1	2	3	4	5	6	7
17	My self-esteem is influenced by how attractive I think my face or facial features are	1	2	3	4	5	6	7
18	My self-estem would suffer if I didn't have God' love	1	2	3	4	5	6	7
19	Doing well in school gives me a sense of self-respect	1	2	3	4	5	6	7
20	Doing better than others gives me a sense of self-respect	1	2	3	4	5	6	7
21	My sense of self-worth suffers whenever I don't think I look good	1	2	3	4	5	6	7
22	I feel better about myself when I know I'm doing well academically	1	2	3	4	5	6	7
23	What others think of me has no effect on what I think about myself	1	2	3	4	5	6	7
24	When I don't feel loved by my family, my self-esteem goes down.	1	2	3	4	5	6	7

25	My self-worth is affected by how well I do when I am competing with others	1	2	3	4	5	6	7
26	My self-esteem goes up when I feel that god loves me	1	2	3	4	5	6	7
27	My self-esteem is influenced by my academic performance	1	2	3	4	5	6	7
28	My self-esteem would suffer if I did something unethical	1	2	3	4	5	6	7
29	It is important to my self-respect that I have a family that cares about me	1	2	3	4	5	6	7
30	My self-esteem does not depend on whether or not I feel attractive	1	2	3	4	5	6	7
31	When I think that I am disobeying God, I feel bad about myself	1	2	3	4	5	6	7
32	My self-worth is influenced by how well I do on competitive tasks	1	2	3	4	5	6	7
33	I feel bad about myself whenever my academic performance is lacking	1	2	3	4	5	6	7
34	My self-esteem depends on whether or not I follow my moral/ethical principles	1	2	3	4	5	6	7
35	My self-esteem depends on the opinions others hold of me	1	2	3	4	5	6	7

Appendix F

Edited items from the Revised Excessive Reassurance Seeking Scale (Nesi, 2015)

How true are each of these for you?

	Not at all true	A little bit true	Somewhat true	Very true	Extremely True
I want to know if other people think I look attractive	1	2	3	4	5
I want to know if other people think my clothes look okay.	1	2	3	4	5
I want to know if other people think my weight or body shape is okay.	1	2	3	4	5

Appendix G

Selfie and Social Media Questionnaire

Social Media Platforms

1. Which of the following social media platforms do you use? (Check all that apply)

- ☐ Facebook
- ☐ Instagram
- ☐ Twitter
- ☐ LinkedIn
- ☐ Periscope
- ☐ Flickr
- ☐ Pinterest
- ☐ Snapchat
- ☐ Other: _____

Social Media Use

2. For each of the social media platforms listed below, please indicate whether you have a private or public account, the number of friends/followers you have on that particular social media platform, the number of people you are following on that particular social media platform, and the amount of time you spend in minutes each day on that particular social media platform.

For type of account, enter 1, 2, or 3:
1 = Private Account (only people I approve can view my profile)
2 = Public Account (anyone can view /follow my profile)
3 = Don't Know
If you do not have a particular social media platform, check off Not Applicable.

Facebook

Type of Account (Enter 1-private, 2-public, or 3-don't know)
Number of followers/friends I have on Facebook:
Number of people I am following on Facebook:
Average amount of time (in minutes) spent on Facebook per day
☐ Not Applicable. (I don't have Facebook)

Twitter

Type of Account (Enter 1-private, 2-public, or 3-don't know)
Number of followers/friends I have on Twitter:
Number of people I am following on Twitter:
Average amount of time (in minutes) spent on Twitter per day
☐ Not Applicable. (I don't have Twitter)

Snapchat

Type of Account (Enter 1-private, 2-public, or 3-don't know)
Number of followers/friends I have on Snapchat:
Number of people I am following on Snapchat:
Average amount of time (in minutes) spent on Snapchat per day
☐ Not Applicable. (I don't have Snapchat)

Instagram

Type of Account (Enter 1-private, 2-public, or 3-don't know)
Number of followers/friends I have on Instagram:
Number of people I am following on Instagram:
Average amount of time (in minutes) spent on Instagram per day
☐ Not Applicable. (I don't have Instagram)

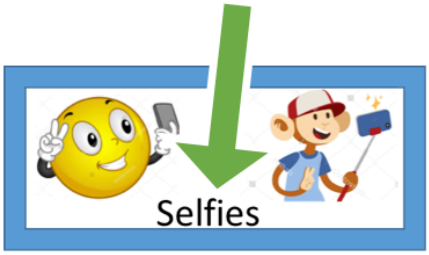
Photos on Social Media

3. Have you ever posted a photo on social media? **yes** or **no**
4. How often do you post photographs on social media?
   1 – less than once a month
   2 – once a month
   3 – once every two weeks
   4 - once or twice a week
   5 – more than twice a week, but not every day
   6 – once a day
   7 – more than once a day
   8 – Not Applicable – I never post photos on social media

5. When you post a photo on social media, how often do you hashtag the picture?
   Never Rarely Sometimes Often Always

Selfies and Usies

A selfie is defined as a photograph that one has taken of oneself, typically taken with a smartphone or webcam and shared via social media. Researchers distinguish between selfies and usies. Selfies are pictures of only oneself, whereas usies include other people (See Below).



6. Prior to your participation in this study, did you differentiate self-taken photos of only yourself, from those including other people? **yes** or **no**

With the definitions of <u>selfie</u> and <u>usie</u> in mind, please answer the following questions.

7. Have you ever taken an usie? **yes or no**

8. How often do you take usies?
   1 – less than once a month
   2 – once a month
   3 – once every two weeks
   4 - once or twice a week
   5 – more than twice a week, but not every day
   6 – once a day
   7 – more than once a day
   8 – Not Applicable – I never take usies

9. Have you ever posted an usie on social media? **yes** or **no**
10. How often do you post usies on social media?
   1 – less than once a month
   2 – once a month
   3 – once every two weeks
   4 - once or twice a week
   5 – more than twice a week, but not every day
   6 – once a day
   7 – more than once a day
   8 – Not Applicable – I never post usies on social media

11. When you post an usie on social media, how often do you hashtag the picture?
   Never Rarely Sometimes Often Always
12. Have you ever taken a selfie? **yes** or **no**
13. How often do you take selfies?
   1 – less than once a month
   2 – once a month
   3 – once every two weeks
   4 - once or twice a week
   5 – more than twice a week, but not every day
   6 – once a day
   7 – more than once a day
   8 – Not Applicable – I never take usies

14. Have you ever posted a selfie on social media? **yes** or **no**
15. How often do you post selfies on social media?

   1 – less than once a month
   2 – once a month
   3 – once every two weeks
   4 - once or twice a week

5 – more than twice a week, but not every day
6 – once a day
7 – more than once a day
8 – Not Applicable – I never post usies on social media

16. When you post a selfie on social media, how often do you hashtag the picture?
Never Rarely Sometimes Often Always
17. How many photos have you posted on social media within the past 2 months?
18. How many of these photos were usies?
19. How many of these photos were selfies?
20. When you post a selfie (i.e., a self-taken photograph of ONLY yourself) on Instagram, how many likes do you typically expect to receive? (If you do not have Instagram, please type 12345)

Appendix H

Rosenberg Self-Esteem Scale

(Rosenberg, 1965)

Please record the appropriate answer per item, depending on whether you strongly agree, agree, disagree, or strongly disagree with it.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

_____1. I feel that I am a person of worth, at least on an equal plane with others.
_____2. I feel that I have a number of good qualities.
_____3. All in all, I am inclined to feel that I am a failure.
_____4. I am able to do things as well as most people.
_____5. I feel that I do not have much to be proud of.
_____6. I take a positive attitude toward myself.
_____7. On the whole, I am satisfied with myself.
_____8. I wish I could have more respect for myself.
_____9. I certainly feel useless at times.
_____10. At times I think that I am no good at all.

Appendix I

Narcissistic Personality Inventory – 40
(Raskin & Terry, 1988)

1. __ A. I have a natural talent for influencing people.
   B. I am not good at influencing people.
2. _ A. Modesty doesn't become me.
   B. I am essentially a modest person.
3. __ A. I would do almost anything on a dare.
   B. I tend to be a fairly cautious person.
4. __ A. When people compliment me I sometimes get embarrassed.
   B. I know that I am good because everybody keeps telling me so.

5. __ A. The thought of ruling the world frightens the hell out of me.
   B. If I ruled the world it would be a better place.

6. __ A. I can usually talk my way out of anything.
   B. I try to accept the consequences of my behavior.

7. __ A. I prefer to blend in with the crowd.
   B. I like to be the center of attention.

8. __ A. I will be a success.
   B. I am not too concerned about success.

9. __ A. I am no better or worse than most people.
   B. I think I am a special person.

10. __ A. I am not sure if I would make a good leader.
    B. I see myself as a good leader.

11. __ A. I am assertive.
    B. I wish I were more assertive.

12. __ A. I like to have authority over other people.
    B. I don't mind following orders.

13. __ A. I find it easy to manipulate people.
    B. I don't like it when I find myself manipulating people.

14. __ A. I insist upon getting the respect that is due me.
    B. I usually get the respect that I deserve.

15. __ A. I don't particularly like to show off my body.
B. I like to show off my body.

16. __ A. I can read people like a book.
B. People are sometimes hard to understand.

17. __ A. If I feel competent I am willing to take responsibility for making decisions.
B. I like to take responsibility for making decisions.

18. _ A. I just want to be reasonably happy.
B. I want to amount to something in the eyes of the world.

19. __ A. My body is nothing special.
B. I like to look at my body.

20. __ A. I try not to be a show off.
B. I will usually show off if I get the chance.

21. __ A. I always know what I am doing.
B. Sometimes I am not sure of what I am doing.

22. __ A. I sometimes depend on people to get things done.
B. I rarely depend on anyone else to get things done.

23. __ A. Sometimes I tell good stories.
B. Everybody likes to hear my stories.

24. __ A. I expect a great deal from other people.
B. I like to do things for other people.

25. __ A. I will never be satisfied until I get all that I deserve.
B. I take my satisfactions as they come.

26. __ A. Compliments embarrass me.
B. I like to be complimented.

27. __ A. I have a strong will to power.
B. Power for its own sake doesn't interest me.

28. __ A. I don't care about new fads and fashions.
B. I like to start new fads and fashions.

29. __ A. I like to look at myself in the mirror.
B. I am not particularly interested in looking at myself in the mirror.

30. __ A. I really like to be the center of attention.
B. It makes me uncomfortable to be the center of attention.

31. __ A. I can live my life in any way I want to.
B. People can't always live their lives in term of what they want.

32. __ A. Being an authority doesn't mean that much to me.
B. People always seem to recognize my authority.

33. __ A. I would prefer to be a leader.
B. It makes little difference to me whether I am a leader or not.

34. __ A. I am going to be a great person.
B. I hope I am going to be successful.

35. __ A. People sometimes believe what I tell them.
B. I can make anybody believe anything I want them to.

36. __ A. I am a born leader.
B. Leadership is a quality that takes a long time to develop.

37. __ A. I wish somebody would someday write my biography.
B. I don't like people to pry into my life for any reason.

38. __ A. I get upset when people don't notice how I look when I go out in public.
B. I don't mind blending into the crowd when I go out in public.

39. __ A. I am more capable than other people.
B. There is a lot that I can learn from other people.

40. __ A. I am much like everybody else.
B. I am an extraordinary person.

Appendix J

Eating Disorder Inventory – 2
(Garner, 1991)

The items below ask about your attitudes, feelings, and behaviour. Some of the items relate to food or eating. Other items ask about your feelings about yourself. For each item, decide if the item is true about you ALWAYS (A), USUALLY (U), OFTEN (O), SOMETIMES (S), RARELY (R), or NEVER (N). Click the letter that corresponds to your rating. For example, if your rating for an item is OFTEN, you would circle the O for that item.

		Always (A)	Usually (U)	Often (O)	Sometimes (S)	Rarely (R)	Never (N)
1	I eat sweets and carbohydrates without feeling nervous.	A	U	O	S	R	N
2	I think that my stomach is too big.	A	U	O	S	R	N
3	I wish that I could return to the security of childhood.	A	U	O	S	R	N
4	I eat when I am upset.	A	U	O	S	R	N
5	I stuff myself with food.	A	U	O	S	R	N
6	I wish that I could be younger.	A	U	O	S	R	N
7	I think about dieting.	A	U	O	S	R	N
8	I get frightened when my feelings are too strong.	A	U	O	S	R	N
9	I think that my thighs are too large.	A	U	O	S	R	N
10	I feel ineffective as a person.	A	U	O	S	R	N
11	I feel extremely guilty after overeating.	A	U	O	S	R	N
12	I think that my stomach is just the right size.	A	U	O	S	R	N
13	Only outstanding performance is good enough in my family.	A	U	O	S	R	N
14	The happiest time in life is when you are a child.	A	U	O	S	R	N
15	I am open about my feelings.	A	U	O	S	R	N
16	I am terrified of gaining weight.	A	U	O	S	R	N
17	I trust others.	A	U	O	S	R	N
18	I feel alone in the world.	A	U	O	S	R	N
19	I feel satisfied with the shape of my body.	A	U	O	S	R	N
20	I feel generally in control of things in my life.	A	U	O	S	R	N

21	I get confused about what emotion I am feeling.	A	U	O	S	R	N
22	I would rather be an adult than a child.	A	U	O	S	R	N
23	I can communicate with others easily.	A	U	O	S	R	N
24	I wish I were someone else.	A	U	O	S	R	N
25	I exaggerate or magnify the importance of weight.	A	U	O	S	R	N
26	I can clearly identify what emotion I am feeling.	A	U	O	S	R	N
27	I feel inadequate.	A	U	O	S	R	N
28	I have gone on eating binges where I felt that I could not stop.	A	U	O	S	R	N
29	As a child, I tried very hard to avoid disappointing my parents and teachers.	A	U	O	S	R	N
30	I have close relationships.	A	U	O	S	R	N
31	I like the shape of my buttocks.	A	U	O	S	R	N
32	I am preoccupied with the desire to be thinner.	A	U	O	S	R	N
33	I don't know what's going on inside me.	A	U	O	S	R	N
34	I have trouble expressing my emotions to others.	A	U	O	S	R	N
35	The demands of adulthood are too great.	A	U	O	S	R	N
36	I hate being less than best at things.	A	U	O	S	R	N
37	I feel secure about myself.	A	U	O	S	R	N
38	I think about bingeing (overeating).	A	U	O	S	R	N
39	I feel happy that I am not a child anymore.	A	U	O	S	R	N
40	I get confused as to whether or not I am hungry.	A	U	O	S	R	N
41	I have a low opinion of myself.	A	U	O	S	R	N
42	I feel that I can achieve my standards.	A	U	O	S	R	N
43	My parents have expected excellence of me.	A	U	O	S	R	N
44	I worry that my feelings will get out of control.	A	U	O	S	R	N
45	I think that my hips are too big.	A	U	O	S	R	N
46	I eat moderately in front of others and stuff myself when they're gone.	A	U	O	S	R	N
47	I feel bloated after eating a normal meal.	A	U	O	S	R	N
48	I feel that people are happiest when they are children.	A	U	O	S	R	N
49	If I gain a pound, I worry that I will keep gaining.	A	U	O	S	R	N
50	I feel that I am a worthwhile person.	A	U	O	S	R	N

51	When I am upset, I don't' know if I am sad, frightened, or angry.	A	U	O	S	R	N
52	I feel that I must do things perfectly, or not do them at all.	A	U	O	S	R	N
53	I have the thought of trying to vomit in order to lose weight.	A	U	O	S	R	N
54	I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close)	A	U	O	S	R	N
55	I think that my thighs are just the right size.	A	U	O	S	R	N
56	I feel empty inside (emotionally).	A	U	O	S	R	N
57	I can talk about personal thoughts or feelings.	A	U	O	S	R	N
58	The best years of your life are when you become an adult.	A	U	O	S	R	N
59	I think my buttocks are too large.	A	U	O	S	R	N
60	I have feelings I can't quite identify.	A	U	O	S	R	N
61	I eat or drink in secrecy.	A	U	O	S	R	N
62	I think that my hips are just the right size.	A	U	O	S	R	N
63	I have extremely high goals.	A	U	O	S	R	N
64	When I am upset, I worry that I will start eating.	A	U	O	S	R	N
65	People I really like end up disappointing me.	A	U	O	S	R	N
66	I am ashamed of my human weaknesses.	A	U	O	S	R	N
67	Other people would say that I am emotionally unstable.	A	U	O	S	R	N
68	I would like to be in total control of my bodily urges.	A	U	O	S	R	N
69	I feel relaxed in most group situations.	A	U	O	S	R	N
70	I say things impulsively that I regret having said.	A	U	O	S	R	N
71	I go out of my way to experience pleasure.	A	U	O	S	R	N
72	I have to be careful of my tendency to abuse drugs.	A	U	O	S	R	N
73	I am out going with most people.	A	U	O	S	R	N
74	I feel trapped in relationships.	A	U	O	S	R	N
75	Self-denial makes me feel stronger spiritually.	A	U	O	S	R	N
76	People understand my real problems.	A	U	O	S	R	N
77	I can't get strange thoughts out of my head.	A	U	O	S	R	N

78	Eating for pleasure is a sign of moral weakness.	A	U	O	S	R	N
79	I am prone to outbursts of anger or rage.	A	U	O	S	R	N
80	I feel that people give me the credit I deserve.	A	U	O	S	R	N
81	I have to be careful of my tendency to abuse alcohol.	A	U	O	S	R	N
82	I believe that relaxing is simply a waste of time.	A	U	O	S	R	N
83	Others would say that I get irritated easily.	A	U	O	S	R	N
84	I feel like I am losing out everywhere.	A	U	O	S	R	N
85	I experience marked mood shifts.	A	U	O	S	R	N
86	I am embarrassed by my bodily urges.	A	U	O	S	R	N
87	I would rather spend time by myself than with others.	A	U	O	S	R	N
88	Suffering makes you a better person.	A	U	O	S	R	N
89	I know that people love me.	A	U	O	S	R	N
90	I feel like I must hurt myself or others.	A	U	O	S	R	N
91	I feel like I really know who I am.	A	U	O	S	R	N

Appendix K

Brief Fear of Negative Evaluation Scale
(Carleton, McCreary, Norton, & Asmundson, 2006)

Please select the number that best corresponds to how much you agree with each item.

	Not at all characteristic of me	A little characteristic of me	Somewhat characteristic of me	Very characteristic of me	Entirely characteristic of me
1. I worry about what other people will think of me even when I know it doesn't make any difference.	1	2	3	4	5
2. It bothers me when people form an unfavourable impression of me.	1	2	3	4	5
3. I am frequently afraid of other people noticing my shortcomings.	1	2	3	4	5
4. I worry about what kind of impression I make on people.	1	2	3	4	5
5. I am afraid that others will not approve of me.	1	2	3	4	5
6. I am afraid that other people will find fault with me.	1	2	3	4	5
7. I am concerned about other people's opinions of me.	1	2	3	4	5
8. When I am talking to someone, I worry about what they may be thinking about me.	1	2	3	4	5
9. I am usually worried about what kind of impression I make.	1	2	3	4	5
10. If I know someone is judging me, it tends to bother me.	1	2	3	4	5
11. Sometimes I think I am too concerned with what other people think of me.	1	2	3	4	5
12. I often worry that I will say or do wrong things.	1	2	3	4	5

Appendix L

Beck Depression Inventory –II
(Beck, Steer, & Brown, 1996)

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today.** Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism
- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure
- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure
- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6. Punishment Feelings
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7. Self-Dislike
- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8. Self-Criticalness
- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thought or Wishes
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10. Crying
- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

11. Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to.
3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.

1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.

2a I sleep a lot more than usual.
2b I sleep a lot less than usual.

3a I sleep most of the da

3b I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.

1a My appetite is somewhat less than usual.
1b My appetite is somewhat greater than usual.
2a My appetite is much less than before.
2b My appetite is much greater than before.

3a I have no appetite at all.
3b I crave food all the time.

19. Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Appendix M

Study I Consent Form

Consent to Participate in Research

Title of Study: Social Media Use among Women

You are asked to participate in a research study conducted by Felicia Chang, supervised by Dr. Josée Jarry, from the Department of Psychology at the University of Windsor. The results of this study will be used to fulfil the requirements of a doctoral dissertation. If you have any questions or concerns about the research, please feel to contact the primary investigator, Felicia Chang by e-mail at chang19@uwindsor.ca, or the faculty supervisor, Dr. Josée Jarry at (519) 253-3000, extension 2237, or by e-mail at jjarry@uwindsor.ca.

PURPOSE OF THE STUDY
The purpose of this study is to better understand what motivates women to use social media and the impact of social media use on their well-being.

PROCEDURES
If you volunteer to participate in this study, you will be asked to complete a series of questionnaires online that will take up to 60 minutes to complete. At the end of the study you will be asked questions to determine your eligibility for another study being conducted by the primary investigator, which is labelled Part 2 on the Participant Pool. If you are eligible to participate, a link to that study will be sent to you approximately two weeks after you complete this study. If you are not eligible to participate, your registration in Part 2 on the Participant Pool will be cancelled by the primary investigator, with no consequence to you.

POTENTIAL RISKS AND DISCOMFORTS
During the course of your participation in this study, you may be asked to answer questions that are personal or make you feel uncomfortable. Some items on the questionnaires may be interpreted as insensitive, however these questions are part of a standardized scale and cannot be modified. However, they do not reflect the intent of the research. If you do have any questions or concerns, you are welcome to contact the primary investigator, Felicia Chang. Alternatively, if you have any concerns you wish to discuss with an independent party, please feel free to contact the Student Counselling Centre at 519-253-3000 Ext. 4616.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY
Your participation in this study provides you the opportunity to learn about and contribute to psychological research. Additionally, the information provided by individuals who participate in this study may increase society's knowledge of social media use among women.

COMPENSATION FOR PARTICIPATION
Part 1 (i.e., this study) will take no more than 60 minutes of your time and is worth 1 bonus point if you are registered in the pool and you are registered in one or more eligible psychology courses. As mentioned previously, at the end of the study you will be asked questions to determine your eligibility for another study being conducted by the primary investigator, which is labelled Part 2 on the Participant Pool. If you are eligible, Part 2 will take no more than 30 minutes of your time and you will have the opportunity to earn an additional 0.5 bonus points if you are registered in one or more eligible courses.

CONFIDENTIALITY
Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Your data will be retained on the primary investigator's computer which is password protected for10 years. After this, the data will be destroyed. Your data will also be on the FluidSurveys server until September 2017.

PARTICIPATION AND WITHDRAWAL
Your participation in this study is completely voluntary. You may withdraw from the study at anytime by exiting the browser or clicking the button on the screen indicating that you would like to withdraw. If you withdraw prior to completing the study, any data you provide until that point then will be discarded. Deciding not to participate in this study or withdrawing from this study before it is complete will not result in any penalty (i.e., deduction of bonus points). However, you will not receive compensation for your participation if the study is not completed in its entirety. You may also withdraw your data from the study after completing it, by e-mailing the primary investigator. If you wish to do so, you must e-mail the primary investigator within 30 days of completing the study. Once that date has passed, you will not be able to do so. A decision to withdraw your data after having completed the study will not result in a penalty, and the points you already would have earned will not be taken back. Additionally, a decision not to participate or to withdraw will not affect your academic standing or your relationship with the university. Lastly, it is of note that the investigator can also remove your data from this study if circumstances arise which warrant doing so (e.g. incomplete questionnaires or invalid responding).

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS
Research findings for this study will be available to participants, and will be posted on the University of Windsor REB website. Web address: www.uwindsor.ca/reb Date when results are available: December 2018.

SUBSEQUENT USE OF DATA
These data may be used in subsequent studies, in publications and in presentations.RIGHTS OF RESEARCH PARTICIPANTSIf you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e‑mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH PARTICIPANT/LEGAL REPRESENTATIVE
I understand the information provided for the study Social Media Use Among Women as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. By clicking "Yes," I AGREE to participate in this study. I will print a copy of this consent form for my own reference. If you click yes (i.e., you agree to participate in this study), please type your name in place of a signature.By clicking "No," I am indicating that I DO NOT agree to participate in this study.

- ○ Yes _____
- ○ No

Date:

____/__/__ (YYYY/MM/DD)

Appendix N

Explanation of recruitment difficulties and rationale for early termination of data collection for Study II.

A power analysis assuming a medium effect size, an alpha of .05, and power of .80 was conducted and revealed that 92 participants would be required to achieve significant results in Study II. A medium effect size was assumed given that the correlation between positive appearance related feedback and self-esteem was found to be .27 in Herbozo and Thompson's (2006) study. However, because .27 is slightly less than .3 (the correlation coefficient associated with a medium effect size), 100 participants were desired.

Other studies were successful in obtaining consent to follow the social media platforms of over 100 participants (e.g., Barry et al., 2015; Eftekhar, Fullwood, & Morris, 2014; Mehdizadeh, 2010), so it seemed feasible. For example, Eftekhar et al. (2014) recruited 150 participants, and ended with a usable sample of 130 participants. Four people did not add the researcher as a friend, and three people terminated the researcher's ability to view their account early. The others did not meet the inclusion criteria. Thus approximately 95% (130/137 = .948) of eligible participants allowed the researcher to view their personal account. Despite this, the committee overseeing the present study was concerned that women may not welcome the idea of having a researcher peruse their private Instagram accounts (as mentioned in Study I – see Study I Methods), as this had never been done at the University of Windsor. Thus, it was decided that women with public accounts also would be included if there were difficulties recruiting participants with private accounts.

Initially participants only were to be recruited through the participant pool as it provides cost-free compensation to participants on the part of the researcher, and to be consistent with Studies I and III. Recruitment began at the end of February 2017. At that time, there were 381 individuals in the participant pool who met the screening criteria of identifying as female, having a private Instagram account, and "rarely" or "never" deleting selfies posted on Instagram. However, after the first two weeks of recruitment, only 26 individuals registered for this study. After registering, participants were asked whether they had posted at least one selfie on Instagram within the past two months to determine study eligibility. Of these 26 people, only 19 individuals self-reported posting at least one selfie within the past two months and were, therefore, sent follow requests. All 19 individuals accepted the follow request. However, when participants' Instagram accounts were accessed, the primary investigator found that five women did not have any selfies posted within the past two months and two individuals were found to have public accounts despite reporting having private accounts. Thus, only 12 individuals actually met the inclusion criteria for the study and had Instagram accounts that could be coded for the purposes of this study.

The low proportion of potential participants that were registering for the study and the fact that not all of these people were truly eligible based on the inclusion criteria was

concerning as the end of the main academic year (i.e., September to April) was nearing. From previous experience recruiting through the participant pool, the primary investigator learned that recruitment tended to slow down towards the end of the academic year as many students would already have obtained their bonus credits. In addition, there tended to be fewer students enrolled in the participant pool in the summer months, which would make recruitment through the participant pool less fruitful. Thus, it was decided that additional recruitment strategies would be necessary in order to complete data collection in a timely manner. Ethics approval then was obtained to recruit participants by posting posters through campus, handing out flyers, and e-mailing the study advertisement to all major undergraduate clubs on campus.

Despite the additional recruitment efforts, by September 2017, useable data had only been obtained from 33 participants. Analysis of the data from Study I, suggested that there was only one significant difference between individuals with public and private accounts (see Study II Results section). Thus, it was decided that anyone with an Instagram account, regardless of whether it was public or private would be eligible to participate, in the hopes of increasing the number of people who would register for the study.

Although obtaining more participants would be beneficial in addressing the hypotheses of this study, other issues associated with changes to Instagram such the ability to post multiple photos in a single post, and the increasing popularity of Instagram stories and video posts/boomerangs also were occurring. Selfies posted in the form of boomerangs/videos or as part of the Instagram story received “views” rather than “likes” which meant that they could not be coded using the coding scheme designed for this study. Thus, the changes that were occurring with Instagram questioned the importance of likes as a basic premise of this study and reduced the external validity of this study, as it meant that only a small proportion of posted content could be coded. Therefore, given the difficulties with recruitment and changes to Instagram that were occurring during data collection, the internal committee agreed that data collection could stop at the end of the fall semester (i.e., December 2017) even if the target number of participants was not obtained.

Appendix O

Study II - Proposed and Amended Inclusion Criteria

The inclusion criteria used in Study II differed from those proposed for various reasons as outlined in the table below.

Proposed inclusion criterion and rationale	**Amended Inclusion Criterion and rationale**
Identify as female	*N/A - No change made*
Have a private Instagram account Women with private accounts were sought-after as information regarding the total number of people who could potentially like a photo would be necessary to accurately determine the proportion of participants' followers who liked their selfie. Within a private account, an individual's number of followers reflects the maximum number of people who could like any of his/her photos, whereas when an individual has a public account any Instagram user can like their photo, which makes the maximum number of potential likers unknown.	Given difficulties with recruitment and the finding, using Study I data, that there was only one significant difference between individuals with public and private accounts, it was decided that anyone with an Instagram account, regardless of whether it was public or private would be eligible to participate, in the hopes of increasing the number of people who would register for the study.
Post selfies at least once or twice per week Previous studies indicated that regular selfie posters post 1.39 selfies per week (Re et al., 2016), and that 75% of women post approximately one selfie per week (Porch, 2015). Thus, this frequency of selfie posting was considered to be reflective of the average selfie-poster. In addition, collecting data from individuals who post selfies fairly regularly was thought to be important in order to ensure that all participants had the opportunity to receive likes and comments on a regular basis, as may be required in order to have an impact on self-esteem and appearance satisfaction over a period of time.	Analysis of the data from Study I, revealed that female undergraduate students at the University of Windsor post selfies much less often than indicated by past research. Only 5.7% (n = 17) of participants in Study 1 (N = 297) reported posting selfies once or twice per week. Thus, rather than only recruit women who posted selfies 1-2 times per week, this inclusion criterion was amended to having posted at least one selfie within the past two months.
'Never' or 'rarely' delete selfies they have posted on Instagram Only participants who indicated that they rarely or never deleted selfies were to be included because social media platforms allow users to delete photos they have posted (Barry et al., 2015), which makes it possible for women to delete photos that were once posted, for example, due to lack of likes. If this were the case, the likes and comments being coded would not be representative of what participants actually experienced.	*N/A - No change made*

Appendix P

Body Esteem Scale for Adolescents and Adults (Mendelson, Mendelson, & White, 2001)

Instructions: Think about the past 2 months, and indicate how often you agree with the following statements. Choose the appropriate number below each statement.

1. I like what I look like in pictures

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

2. Other people consider me good looking

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

3. I'm proud of my body

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

4. I am preoccupied with trying to change my body weight

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

5. I think my appearance would help me get a job

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

6. I like what I see when I look in the mirror

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

7. There are a lot of things I'd change about my looks if I could

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

8. I am satisfied with my weight

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

9. I wish I looked better

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

10. I really like what I weigh

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

11. I wish I looked like someone else

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

12. People my own age like my looks

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

13. My looks upset me

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

14. I’m as nice looking as most people

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

15. I’m pretty happy about the way I look

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

16. I feel I weigh the right amount for my height

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

17. I feel ashamed of how I look

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

18. Weighing myself depressed me

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

19. My weight makes me unhappy

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

20. My looks help me to get dates

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

21. I worry about the way I look

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

22. I think I have a good body

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

23. I’m looking as nice as I’d like to

0	1	2	3	4
Never	Seldom	Sometimes	Often	Always

Appendix Q

Coding sheet

Coder: _____ Current Date: _____ Date coded back to: _____
Participant ID: _____ Number of followers: _____
# of photos posted in the past 2 months: __ # of selfies posted in the past 2 months: _____

Selfie #	**Description and/or caption**	**Date Picture Posted** **m/d/y**	**# of Likes**	**# of comments <u>from others</u>**	**Comment(s)** **From oldest to most recent**	**Pos/Neg** **0 =** neg **1 =** pos **2 =** neutral *if the comment is ONLY emojis put E	**Appearance** **0** = not appearance related **1** = appearance related *if the comment is ONLY emojis put E
example	Picture taken at the beach with participant wearing a pink t-shirt "finally warm enough to wear a t-shirt "	12/05/16	25	3	"So pretty!" with heart eye emoji	1	1
					So jealous! you're at the beach and I'm here studying	2	0
					Green heart emoji	E	E
1							
2							
3							

Appendix R

Study II Screening Questions

Participant pool participants:

1. What is your biological sex? [male/**female**/intersex/other]*

2. How often do you delete selfies that you have posted on social media?

   [**never/rarely**/sometimes/often/always]

3. *A selfie is defined as a photograph that one has taken of only oneself, typically taken with a smartphone or webcam and shared via social media.*

   Have you posted at least one selfie within the past 2 months? [**yes**/no]

**This question is a standard question included in the participant pool screening questionnaire. Therefore, the wording was not determined by the primary investigator*

Individuals recruited from outside of the pool:

1. What is your biological sex? [male/**female**/intersex/other]

2. Which of the following are you? [**undergraduate student**/graduate student/not a student]

3. How often do you delete selfies that you have posted on social media?

   [**never/rarely**/sometimes/often/always]

4. *A selfie is defined as a photograph that one has taken of only oneself, typically taken with a smartphone or webcam and shared via social media.*

   Have you posted at least one selfie within the past 2 months? [**yes**/no]

Appendix S

Study II Recruitment Poster

University of Windsor

Are you a female undergraduate student who uses Instagram?

If so, you are invited to participate in the study "ONLINE study: The Impact of Instagram Feedback on Women" which is being conducted **online**.

- You will be asked to **complete some questionnaires** online. Upon completion of the questionnaires, you will be asked for **your Instagram account** (i.e., @_____), and be **sent a follow request** from our research account within 24 hours.
- You will be expected to **accept the request within 4 days**, at which point **your Instagram account will be coded** for various information such as the number of followers you have. Once we are finished coding your account, we will unfollow you.
- You will receive a **$5.00 gift card to Starbucks** for your participation.

Contact Felicia Chang (chang19@uwindsor.ca) for more information

Faculty Supervisor: Dr. Josee Jarry (jjarry@uwindsor.ca)

This study has been reviewed and received clearance from the Research Ethics Board at the University of Windsor

Appendix T

Study II Supplementary Analysis

T-tests between women whose accounts were coded and those whose were not due to the absence of selfies

	Instagram account coded (n = 48)	No selfies (n = 41)				Bootstrapped 95% Confidence Interval	
	Mean (*SD*)	Mean (*SD*)	*t*	df	Sig.	Lower	Upper
BMI	24.91 (6.08)	24.76 (6.55)	0.12	87	.923	-2.489	2.877
BDI-II	13.22 (9.31)	12.24 (9.67)	0.48	87	.643	-2.933	4.870
CSW-App.	4.95 (0.95)	5.15 (0.89)	-0.98	87	.330	-0.569	0.213
BESAA – App.	2.20 (0.86)	2.08 (0.81)	0.68	87	.504	-0.227	0.443
RSES	20.48 (5.60)	19.61 (5.35)	0.75	87	.456	-1.284	2.941
BFNE	36.12 (13.15)	37.85 (10.85)	-0.67	87	.477	-6.292	3.200
PMS	19.68 (6.77)	19.77 (6.71)	-0.06	87	.959	-2.990	2.699

Note: BMI – Body Mass Index; BDI-II = Beck Depression Inventory –II; CSW – App. = Contingencies of Self-worth Scale – Appearance subscale; BESAA-App. = Body Esteem Scale for Adolescents and Adults, appearance subscale; RSES = Rosenberg Self-Esteem Scale; BFNE-II – Brief Fear of Negative Evaluation – II; PMS = Photo Manipulation Scale

Appendix U

Study III Screening Questions

Participant pool participants:

1. Do you currently have Instagram and use it regularly? [**yes**/no]

2. Have you posted at least one selfie on Instagram in the past 30 days?***** [**yes**/no]

**This question was changed to "Have you posted at least one selfie on Instagram"*

Appendix V
Study III Vignette

Part 1:

You hear the door slam, slowly open your eyes, and roll over in your bed to look at your phone, only to realize that you woke up way before your alarm was set to sound. The sun is shining into your room, and so you decide to get out of bed and get your day started rather than go back to sleep. You put on your favourite playlist and start to get ready for school. For once, you're able to relax and take your time getting ready, rather than simply brushing your teeth, throwing your hair into a bun, and then running out the door in the hopes of making it to school on time like usual. Once you're all ready for school, you grab your keys, backpack, and phone and head for the car. You get in and toss your phone and backpack onto the passenger seat. As you turn around to grab your seat belt, you catch a glimpse of yourself in the rearview mirror and decide to grab your phone and take a quick selfie, well more like a few selfies. You then looked through them, pick your favourite, and post it on Instagram with the hashtags #RiseandShine #LoveSunnyMornings and a sun emoji. Then you put your phone in the cup holder, start the car, and start driving to school.

Part 2:

About 30 minutes later, you pull into the parking lot, and get an awesome spot since you're earlier than usual. You grab your backpack, lock the car, and proceed to walk to class at a leisurely rate. You get to class with time to spare, so you reach into your backpack to grab your phone, only to realize that you left it in your car. It's not a big deal, you can grab it in a few hours during your break between classes. Class finally ends, and you walk back to your car, eager to grab your phone, and sure enough there it is sitting in the cup holder. You pick it up, lock your car and then proceed to go on Instagram while walking back to campus. Once you open the app, you notice the little orange dot underneath the heart/comment icon on the dashboard, so you tap it and, and see that _____ people have liked the photo you posted this morning. You then put your phone into your pocket and continue walking.

Appendix W

Visual Analog Scales

Please slide the vertical bar along the line to indicate your response to each item.

1. How good do you feel about yourself RIGHT NOW?

Not at all good — Extremely Good

2. How happy do you feel RIGHT NOW

Not at all happy — Extremely Happy

3. How sad do you feel RIGHT NOW?

Not at all sad — Extremely Sad

4. How sleepy do you feel RIGHT NOW?

Not at all sleepy — Extremely sleepy

Appendix X

State Self-Esteem Scale

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. _____
2. I am worried about whether I am regarded as a success or failure. _____
3. I feel satisfied with the way my body looks right now. _____
4. I feel frustrated or rattled about my performance. _____
5. I feel that I am having trouble understanding things that I read. _____
6. I feel that others respect and admire me. _____
7. I am dissatisfied with my weight. _____
8. I feel self-conscious. _____
9. I feel as smart as others. _____
10. I feel displeased with myself. _____
11. I feel good about myself. _____
12. I am pleased with my appearance right now. _____
13. I am worried about what other people think of me. _____
14. I feel confident that I understand things. _____
15. I feel inferior to others at this moment. _____
16. I feel unattractive. _____
17. I feel concerned about the impression I am making. _____
18. I feel that I have less scholastic ability right now than others. _____
19. I feel like I'm not doing well. _____
20. I am worried about looking foolish. _____

Appendix Y

Study III: Validity Check

Part 1:

Based on what you read, which emoji did you use when you posted your selfie?

a) a flower
b) a sun
c) a turtle
d) an alarm clock

Based on what you read, when did you wake up?

a) much earlier than usual
b) on time
c) much later than usual
d) I did not wake up

Part 2:

Based on what you read, where did you leave your phone?

a) on the dashboard
b) on the ground
c) in the cup holder
d) in the glove compartment

Based on what you read, which app did you go on?

a) Twitter
b) Facebook
c) Snapchat
d) Instagram

Appendix Z

Study III: Debriefing Information

Please turn on your volume and watch the following video.

Please enter the code you saw in the video. _____

Below is a text version of the information you were presented with in the video you just watched. Additionally, there are answers to FAQ.

LETTER OF INFORMATION FOR DEBRIEFING AND CONSENT TO DATA RETENTION

Posting Selfies on Social Media: The Role of Appearance contingent self-worth

Thank you for participating in this study. Although the initial consent form you signed stated that the focus of this research was on social media use, the true focus is on what motivates women to post selfies on social media, and the potential impact of doing so. Additionally, the participant pool ad indicated that Part 1 and Part 2 are two separate studies that were being advertised together for ease of recruitment, they are actually related, and therefore both focus on selfies. The portion you just completed was specifically focused on understanding how women react to receiving more or less likes on a selfie than expected. As you may recall, we obtained your expected number of likes in Part 1, and used this information to create the vignette you read.

It is important that you understand why it is necessary for some psychological studies have names unrelated to the actual topic ofinterest and why we do not to tell people all about the purpose of the study at the very beginning. Participants may select studies that seem more interesting to them, and thus respond differently than people who are not as interested in a particular topic. In psychology we call this a self-selection bias, and often make up pseudo titles for our studies to avoid this. Aside from the title, telling people what the purpose of the experiment is and what we predict about how they will react under particular conditions, might cause participants to deliberately do whatever they think we want them to do, just to help us out and give us the results that they think we want. Alternatively, people might deliberately not do what we predict to show us that we can't figure them out. Either outcome would make the results invalid, because people would be responding to is what they thought we were looking for rather than responding naturally.

As in most psychological research, we are interested in how people think, act and feel, rather than how any one individual thinks, acts, or feels. Thus, we need to test many people and combine their results in order to get a good indication of what variables affect

women's likelihood of posting selfies on social media and the potential impact of doing so. In order for us to draw any conclusions, we have to combine the data we got from you with data we get from other people so that we have enough data to draw conclusions. What this means is that there will be many people participating in this study. It is going to be necessary for us to ask you not to say anything about the study to anyone else. If you talked to someone else about the study and told them all the things I just told you and then they were in the study, their reactions wouldn't be spontaneous and natural, and their results couldn't be used and combined with your data and those from other people. If that happened, we wouldn't have enough data to make conclusions about the average person, so the whole study really would be for nothing. I hope you can see why it is extremely important that I ask you not to say anything about the study. You might think that it won't make a difference if you talk to your roommate about it because they'll never be in the study, but your roommate might say something to someone else who might be in the study. Thus, I would like to ask you not to say anything about the study, other than you completed some questionnaires until the end of the semester.

I also want to let you know that we realize that some of the questionnaires I asked you to complete were personal in nature, or that you might have experienced a state decrease in mood, self-esteem, or appearance satisfaction after reading the vignette. If you have any concerns, I encourage you to discuss your reactions with the primary investigator. If you wish to talk to an outside party about any issues that came to your attention today, please feel free to contact the Student Counselling Centre at 519-253-3000 Ext. 4616. I hope you found your experience of participating in this study interesting. I would be glad to answer any questions you might have. If you have any concerns or questions at all about the study, or are interested in receiving more information, please feel free to contact the primary investigator, Felicia Chang, Department of Psychology, at chang19@uwindsor.ca.

FREQUENTLY ASKED QUESTIONS:

Q: You mentioned that the study was about selfies, but what is it that you want to know about selfies?
A: As you may have noticed, several psychological constructs were measured in Part 1 and Part 2. We are interested in understanding what psychological factors affect the extent to which women post selfies on social media, and then how receiving feedback on these pictures (e.g., likes) affects people's psychological functioning (e.g., mood, self-esteem).

Q: Is there actually a body of research pertaining to selfies?
A: Yes. However, within the field of psychology the existing literature is quite limited at present. You can find more information about selfies in other fields of research, such as the communication journals.

Q: I was asked to rate how sleepy I felt. How does sleepiness relate to receiving likes on selfies?

A: The sleepiness rating was meant to distract from the true variables of interest, and is not actually a variable of interest in the
present study. Given that the vignette you read involves someone getting adequate rest, we thought it would seem like something
we might actually be interested in.

Q: When/how will I be able to hear about the results of this study?
A: As mentioned in the consent form you signed, the results of the study will be posted on the University of Windsor's research
ethics website (www.uwindsor.ca/reb) by December 2018.

Now that you have had the opportunity to read about the study, and why deception was used, please answer the following questions:

1. Based on the information presented above, the two studies you participated in (i.e., "Part 1 - Social Media Use Among Women" and "Part 2 - Pilot Study for Future Research") are actually both parts of a research project about posting selfies on social media.

   True
   False

2. The information you provided in Part 1 was used to manipulate the number of likes mentioned in the vignette you read in Part 2.

   True
   False

[IF THEY ANSWERED BOTH QUESTIONS CORRECTLY, THEY WERE PRESENTED WITH THE FOLLOWING:]

If you have any questions or comments about this study at the present moment, please type them here. If other thoughts or questions arise once you have exited this survey, please feel free to contact the primary investigator by e-mail at chang19@uwindsor.ca

_____
_____
_____

Given that you were not provided with accurate information at the beginning of the study, you are being asked to re-consent to the use of your data.

If you consent below, the data you have provided in the study you just completed will be used (i.e., analyzed in aggregate with the data collected from other participants). You are free to decide not to consent without having to give a reason and without penalty. If

you do not consent, your data will be destroyed.

Yes, I consent to the use of my data. Please type your name in place of a signature:
_____
No, I do not consent to the use of my data. Please type your name in place of a signature:
_____

Please type today's date to indicate the date on which you signed this.
_____/____/____(YYYY/

[IF THEY ANSWERED ONE OR MORE QUESTIONS INCORRECTLY, THEY WERE PRESENTED WITH THE FOLLOWING:]

Although you signed up for a two-part study on the participant pool, the advertisement indicated that Part 1 and Part 2 were actually two separate/distinct studies that were advertised together for ease of recruitment. You were informed that the first study was about women's social media use, and the second study was a pilot study for future research.

However, these two parts are actually related, and the data you provided in Part 1 was used to create the vignette you read in Part 2 today. More specifically, the amount of "likes" in the vignette you read was personalized for you based on the number of likes you reported typically expecting in Part 1. The focus of the research you participated in (i.e., Part 1 and 2) is on what motivates women to posting selfies on social media, and the impact of receiving feedback on these photos (e.g., likes), rather than social media use more generally.

We realize that finding out that you have been deceived might affect you. We also realize that some of the questionnaires I asked you to complete were personal in nature, or that you might have experienced a state decrease in mood, self-esteem, or appearance satisfaction after reading the vignette. If you have any concerns, I encourage you to discuss your reactions with the primary investigator or to contact the Student Counselling Centre at 519-253-3000 Ext. 4616.

Given that you were not provided with fully accurate information when you initially consented to participate in this study you will be asked to re-consent to the use of your data in a moment. Before we ask you this, please read and select one of the two options below.

If you understand information presented above please click the box below that reads, "Yes, I understand the information presented above."

If you do not understand this information, or have questions about the information with which you have been presented that you would like answered before you decide to reconsent, please click the box that reads “I have questions/I would like additional information,” and then type any questions you have.

The primary investigator will try to respond to these questions within 72 hours via e-mail.

- Yes, I understand the information presented above.
- I have questions/I would like additional information.

VITA AUCTORIS

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