

TESTING A BRIEF SELF-COMPASSION INTERVENTION FOR APPEARANCE-BASED  
SOCIAL MEDIA USE: IMPLICATIONS FOR BODY IMAGE AND MOOD

KEISHA C. GOBIN

A DISSERTATION SUBMITTED TO  
THE FACULTY OF GRADUATE STUDIES  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

GRADUATE PROGRAM IN CLINICAL PSYCHOLOGY  
YORK UNIVERSITY  
TORONTO, ONTARIO

AUGUST 2022

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## Abstract

Using social media applications such as Instagram can lead to increased body dissatisfaction and lower mood among young women. One intervention for combating the harmful effects of appearance-based social media may be through facilitating *self-compassion*, or the ability to treat oneself as a friend. This dissertation aimed to determine whether a brief writing-based self-compassion intervention (versus a neutral sorting task) could mitigate increases in body dissatisfaction and negative mood that are commonly observed among women after comparing themselves to thin-ideal images on Instagram. In two randomized controlled trials, 408 women (Study One:  $N = 178$ ; Study Two:  $N = 230$ ) between the ages of 18-55 years old were randomly assigned to complete either a brief self-compassion writing task or a simple sorting task (control). In Study One, participants were asked to scroll through an Instagram profile of pre-selected thin-ideal images and compare themselves to a young woman. Immediately after viewing the images and comparing themselves, participants completed their assigned task (i.e., self-compassion or sorting task). The results demonstrated that engaging in the self-compassion task led to increases in positive affect, more than the control task, but did not improve body dissatisfaction. In Study Two, the order of the intervention was reversed so that participants completed either the self-compassion or sorting task before scrolling through the thin-idealized images on Instagram. These results demonstrated that completing the self-compassion task before Instagram use prevented increases in body dissatisfaction, more than the control condition, but did not improve mood. Differential effects on mood were demonstrated for those on the extreme ends of trait self-compassion and physical appearance perfectionism. Appearance comparison tendency and thin ideal internalization were also examined as potential

moderators with null findings. The results from these studies have the potential to increase women's resilience against certain adverse effects of social media on body image.

*Keywords:* self-compassion; body dissatisfaction; social media; mood; intervention.

## Acknowledgments

First and foremost, I'd like to acknowledge the expertise and guidance I received from my supervisor, Dr. Jennifer Mills. Throughout my academic career, you have gone above and beyond to be a teacher, a mentor, and a friend. Thank you for supporting me through these difficult and rewarding graduate school years. This dissertation would not have been possible without you.

I'd also like to thank my supervisory committee members, Drs. Henny Westra and Skye Fitzpatrick, for your thoughtful comments and revisions that elevated the quality of this project. Thank you to my examining committee, Drs. Joel Katz, Andrea Josse, and Allison Kelly, for your time and insight.

To my loving parents, thank you for proof-reading countless awkward sentences, the many pep-talks, the dinners left out while I worked late into the night, and the shoulders to find rest. You are my strength and my solace. To my sister, thank you for providing an escape and bringing me so much joy during the hardest moments of this endeavour.

Thank you to my labmate, Sarah McComb, and cohort members, Karin Kantarovich, Rebecca Lewinson, Veerpal Bambrah, Julia Halilova, Alison Rose, and Dana Gorelik, for the endless laughs as we survived graduate school together. I couldn't have chosen a better group of women to work alongside.

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Testing a brief self-compassion intervention for appearance-based social media use:

### Implications for body image and mood

Body dissatisfaction is common among young women (De & Chakraborty, 2015) and has serious negative effects on women's well-being, including low self-esteem, depression, and disordered eating in prospective research (Paxton et al., 2006; Slane et al., 2014). Past research identified that negative body image is strongly influenced by sociocultural factors, with the media being the most powerful transmitter of beauty ideals (Groesz et al., 2002). While new research suggests that some young women now strive towards a curvier body-type (McComb & Mills, 2022), several decades of research shows that women who are exposed to media images of the thin-ideal tend to internalize this body type and strive towards thinness and unrealistic standards of beauty (Thompson & Stice, 2001). This can result in increased feelings of body dissatisfaction when women compare their own bodies to idealized body images (Mills et al., 2002) and when they perceive that they cannot achieve this idealized body type (Mingoia et al., 2017; Thompson & Stice, 2001). These effects have long been observed in traditional forms of media like magazines and television (Bury et al., 2017; Tiggemann, 2003). However, emerging research found that body dissatisfaction is also exacerbated through the use of social media applications such as Instagram (Brown & Tiggemann, 2016; McComb & Mills, 2021; McComb et al., 2021; Saiphoo & Zahra, 2019). Recent research shows that exposure to images of attractive and thin celebrities and peers on Instagram results in increased body dissatisfaction and lower mood among young women (Brown & Tiggemann, 2016), particularly when they compare themselves to such images (Hogue & Mills, 2019; McComb & Mills, 2021). Instagram and other social media platforms may actually be a more harmful outlet than traditional forms of media, since the hashtag feature allows users to readily access millions of thin-ideal images through

targeted searches (e.g., #thinspiration or #thin), a common behaviour that could be motivated by a desire for self-improvement (Knobloch-Westerwick & Crane, 2012) or inspiration (Mills et al., 2002). With over one billion Instagram users worldwide (Statista, 2022), it is important to identify accessible, evidence-based strategies to reduce body dissatisfaction and avoid the negative effects of social media on body image.

### **Self-Compassion and Body Image**

One intervention for combating the harmful effects of appearance-based social media may be through facilitating *self-compassion*, or the ability to treat oneself as a friend (Neff, 2003). Stemming from the more general definition of “compassion”, self-compassion involves a non-judgemental understanding of one’s suffering and a desire to heal with kindness. Much like people would not avoid or disconnect from a friend in pain, self-compassion turns people’s attention inward to tend to their own distress. Neff (2003) states that self-compassion is comprised of three facets. The first component, self-kindness, is the basis of understanding that replaces self-criticism and judgement. Common humanity, the second facet, promotes seeing one’s experience as part of a larger human experience. In this way, we are not isolated by our suffering or personal failures. Finally, mindfulness is the ability to be aware of our painful thoughts and feelings without over-identifying with them. Neff (2003) posits that these facets are not independent; they interact to facilitate each other. For example, she suggests that the mental distance achieved through mindfulness allows for less self-criticism and less separateness from human experiences, thus engendering self-kindness and common humanity. Alternatively, self-kindness can encourage a non-judgemental awareness of thoughts and feelings to maintain mindfulness. Acknowledging that suffering happens to all people also facilitates the

interconnectedness of common humanity (Neff, 2003). In this way, self-compassion allows people to acknowledge, approach, and heal their pain.

These facets may be especially pertinent to addressing body image concerns. Specifically, the ability to acknowledge that one is experiencing body image distress, acknowledge that others have also felt this way, and respond with kindness to oneself without a need to change the experience may serve as a powerful intervention. In a review by Braun and colleagues (2016), the authors suggest that self-compassion may protect against negative body image through inverse relationships with known risk factors (e.g., body surveillance, thin-ideal internalization, and drive for thinness) and positive relationships with protective factors (e.g., acceptance of body image distress, appreciating one's body, and mindful or intuitive eating). In exploration of these pathways, Rodgers and colleagues (2017) found that higher levels of all three facets of self-compassion – self-kindness, mindfulness, and common humanity – were related to greater appearance esteem, a protective factor for body image. Additionally, higher levels of self-kindness and mindfulness were related to lower levels of appearance comparison, which is a known body image risk factor (Thogersen-Ntoumani et al., 2017). This research provides some evidence for the ways in which self-compassion contribute towards body image. Of note, the magnitude of the relationship between self-kindness and appearance esteem was larger than that of mindfulness and common humanity (Rodgers et al., 2017), which the authors speculate to mean that self-kindness may operate through a different pathway than the other two components. In a qualitative study of trait self-compassion among undergraduate students, Seekis, Bradley, and Duffy (2021a) found that the component of self-kindness was highlighted as a tool to buffer against body image distress for those with positive body image. Inversely, for those with negative body image, the participants expressed a fear of self-kindness. Mindfulness

and common humanity, however, were not expressed as tools to manage body image distress.

This research suggests that while all three facets of self-compassion may have positive relationships with body image, self-kindness may be easily accessible and most effective.

Overall, bolstering self-compassion may be a way to lessen negative body image.

The effects of self-compassion on body image may also be understood through a newer concept called “body compassion.” Altman and colleagues (2020) describe three dimensions of body compassion including defusion (or the ability to refrain from an overidentification with one’s body), common humanity (i.e., understanding that others also experience negative body image), and acceptance (marked by a non-judgemental approach to negative body experiences). High levels of body compassion were found to be associated with greater self-compassion, more flexibility about one’s body image, higher positive affect, lower negative affect, and lower levels of disordered eating compared to those with low body compassion (Altman et al., 2020). In other words, having more compassion towards one’s body was associated with greater general self-compassion, better body image, better mood states, and less pathological eating behaviours. de Carvalho Barreto and colleagues (2020) explained a pathway by which greater self-compassion was associated with higher levels of body compassion which, in turn, predicted a lower susceptibility to eating disorder symptomology. As such, higher self-compassion may facilitate body compassion, which is an important protector of psychological distress. Oliveria and colleagues (2018) found that body compassion buffered the relationship between general feelings of shame and both body-related shame and disordered eating (Oliveira et al., 2018). It may be that the dimensions of body compassion allow an individual to place less value on their bodies and be more comfortable with body dissatisfaction, which has emotional (i.e., less shame, more positive affect, and less negative affect) and behavioural (i.e., less disordered eating)

implications. While the current studies focus on general self-compassion as a well-established and heavily researched construct, body compassion may help facilitate a theoretical understanding of how self-compassion is related to body image.

**Body dissatisfaction.** Self-compassion may also aid in our understanding of body dissatisfaction as numerous studies have demonstrate a well-established relationship between trait self-compassion and body image. Individuals low on trait self-compassion generally report higher levels of negative body image, including a higher drive for thinness and greater body image disturbance (Przedziecki et al., 2013). In a pathway analysis, Maraldo and colleagues (2016) found that low self-compassion was predictive of greater body dissatisfaction. And when people do not address their existing body dissatisfaction in a kind and compassionate way, they are more likely to report an increased drive for thinness (Ferreira et al., 2013) and poorer psychological quality of life (Duarte et al., 2015). These findings suggest that low levels of general self-compassion may translate to a less compassionate view of one's body, leading to possible dissatisfaction. Inversely, those who report higher levels of trait self-compassion typically report positive body image (Jansen et al., 2021; Neff et al., 2018; Pullmer et al., 2019), including protective factors such as a greater appreciation of one's body (Marta-Simões et al., 2016; Schmidt et al., 2019; Siegel et al., 2020), lower internalization of weight stigmatizing beliefs (Fekete et al., 2021), as well as less preoccupation with being thin (Thogersen-Ntoumani et al., 2017) or their body shape and weight (Wasyliw et al., 2012). Engaging in these protective factors may facilitate the observed low levels of body dissatisfaction (Thogersen-Ntoumani et al., 2017) through a greater appreciation for one's body, spending less time thinking about one's body, and detaching from societal pressures about idealized bodies. Accordingly, individuals with high levels of trait self-compassion reported placing less emphasis on appearance in

reference to their self-worth (Siegel et al., 2020). It appears that having greater self-compassion can facilitate a more compassionate view of one's body which, in turn, is associated with less body dissatisfaction. Even among women with a diagnosed eating disorder who display elevated body dissatisfaction and associated disordered weight control behaviours, those with greater self-compassion reports less severe eating pathology (Pullmer et al., 2019). As a possible explanation, recent research demonstrated that higher levels of self-compassion dampened the relationship between body dissatisfaction and general and specific eating disorder symptoms (Bicaker & Altan-Atalay, 2020; Linardon et al., 2020; Stutts & Blomquist, 2018), as well as psychological distress and psychosocial impairment (Linardon et al., 2020). A recent systematic review and meta-analysis confirmed the reliable relationship between higher self-compassion and greater positive body image, as well as the association to lower body image concerns and eating pathology (Turk & Waller, 2020). Behaviourally, individual high on trait self-compassion also reported making fewer social comparisons based on bodies or eating habits (Siegel et al., 2020) and had less avoidance of their own bodies (Stapleton et al., 2017). Less body avoidance behaviours (e.g., dressing in ways or avoiding social situations that bring attention to one's body; Rosen et al., 1991) may indicate a mindful awareness or willingness to approach body-related thoughts that may also be decreasing body dissatisfaction. Huellemann and Calogero (2020) found that increased self-compassion was associated with less shame about one's body, less internalization or weight biases, and less self-objectification which, in turn, led to less body checking behaviours. Once again, it appears that self-compassion weakens the relationship to prominent risk factors for poor body image, which may promote more positive body experiences.

While previous studies have examined self-compassion as a trait variable, it is also important to note that self-compassion can fluctuate throughout the day which can have varying

effects on our body image and eating habits. To examine the correlates of individual variability in self-compassion, Kelly and Stephen (2016) asked 92 female participants to complete nightly measures of past-day self-compassion, self-esteem, eating behaviour, and body image. They found that fluctuations in self-compassion throughout the day contributed to variability in eating habits and body image, such that greater self-compassion was associated with higher levels of intuitive eating and less dietary restraint, as well as greater body appreciation and satisfaction. The results were maintained when controlling for variations in self-esteem. These findings suggest that there may be benefits on the individual level for state self-compassion and the effects it may have on body-image, especially in the presence of body-image threats.

**Social media and body image.** A risk factor for body dissatisfaction is the use of social media (Brown & Tiggemann, 2016; McComb & Mills, 2021; McComb et al., 2021). Previous research shows that higher trait self-compassion mitigates the impact of social media on body image. For example, having high levels of the three facets of self-compassion lessens the effects of viewing images of fit-ideal bodies (i.e., muscular and tone bodies) on one's drive for thinness (Seekis et al., 2021b). Moreover, trait self-compassion can also influence how people use social media. Higher levels of self-compassion were found to directly weaken the relationship between body-focused talk on social media and body-related shame (Wang et al., 2020a), as well as lessened perceived appearance pressures from their peers which, in turn, indirectly mitigated the association between body talk on social media and body dissatisfaction (Wang et al., 2020b). However, there may be a difference between viewing and creating social media content. Previous research demonstrated that posting selfies on social media leads to negative mood states and lower levels of physical attractiveness (Mills et al., 2018). Unfortunately, self-compassion

was not effective mediating the relationship between actually posting a selfie and subsequent body dissatisfaction (Lonergan et al., 2019).

Previous research has largely examined the role of trait self-compassion in social media use. To investigate whether state self-compassion can be induced during social media use by reading self-compassionate statements, undergraduates were shown either fit-ideal bodies (i.e. fit and toned idealized female body images), images with self-compassionate statements against a neutral background (e.g., “it’s okay to take a break”), a combination of both, or neutral control images for 5 minutes. Slater and colleagues (2017) found that viewing only self-compassion images led to greater state self-compassion, body appreciation, body satisfaction, and lower levels of negative mood than viewing neutral images. Moreover, viewing only five self-compassion images among 15 images of fit-ideal bodies also led to greater state self-compassion, body appreciation, body satisfaction, and lower levels of negative mood than viewing only fit-ideal images. This finding points to a possible buffering effect of self-compassionate statements that may mitigate the negative effects of body-focused social media content. A follow-up study by Barron and colleagues (2021) replicated the findings that viewing self-compassion statements led to reported higher levels of body satisfaction and appreciation than viewing neutral images, but did not find a difference between viewing a combination of fit-ideal images and self-compassionate statements and viewing neutral images. The authors interpreted this finding as lack of evidence for a buffering effect of self-compassion quotes. However, the inconsistent findings suggest that the concurrent presentation of self-compassion content and body-threatening images is not a powerful enough intervention to mitigate body dissatisfaction associated with fit-ideal images. It is also possible that reading quotes is too passive of an

activity. Instead, asking participants to write and foster compassion for themselves may have stronger effects.

### **Potential Moderators of a Self-Compassion Intervention for Body Image**

While there is a well-established relationship between self-compassion and body image, including its relation to social media use, it is important to consider other personality traits that may contribute towards this relationship. Within the field of body image research, three personality traits have consistently emerged as relevant to body dissatisfaction: social comparison tendencies, thin ideal internalization, and physical appearance perfectionism. This section will describe these relationships as potential moderators between self-compassion and body image. Understanding these relationships may clarify the efficacy of a self-compassion intervention intended to mitigate body image distress after social media use.

**Social Comparison Tendency.** The judgements we make about ourselves and others may play a role in our self-compassion and body dissatisfaction. For instance, whether someone is likely to compare their physical appearance to the images they see on social media (i.e., social appearance comparisons) can impact body dissatisfaction. Appearance-based social comparisons have been associated with disordered eating (Saunders & Eaton, 2018) and body image discrepancy (i.e., the difference between one's body image and ideal body standards) via a reduction in body appreciation (Ntoumanis et al., 2020). Using a diary method of data collection (i.e., completing a brief survey at three time points throughout the day), one study found that making more frequent appearance-based social comparisons were associated with greater anxiety that one's body is being negatively evaluated by others (i.e., social physique anxiety) and body dissatisfaction (Thøgersen-Ntoumani et al., 2017).

Social comparisons to idealized body images on social media are reliably associated with increased body dissatisfaction (Fardouly et al., 2017; Hogue & Mills, 2019; Scully et al., 2020), lower levels of body esteem (Modica, 2019), and higher levels of body surveillance (Modica, 2019). More time spent on social media is related to greater body dissatisfaction (Eckler et al., 2017; Scully et al., 2020; Sherlock & Wagstaff, 2019), disordered eating (Eckler et al., 2017), general and appearance-related anxiety, depressive symptoms, and less self-esteem (Sherlock & Wagstaff, 2019). However, rather than mere exposure to social media, these relationships are mediated by social appearance comparison (Jarman et al., 2021; Sherlock & Wagstaff, 2019). Social appearance comparison mediated the relationship between exposure to images of celebrities or peers and body dissatisfaction (Brown & Tiggemann, 2016). In sum, the more people compare their appearance to that of others on social media, the more negative body image we would expect to see.

Some studies have found that lower self-compassion is associated with greater social appearance comparison (Duarte et al., 2015; Homan & Tylka, 2015), which in turn has been found to be associated with greater body image dissatisfaction (Brown & Tiggemann, 2016; Hogue & Mills, 2019). In addition, women who are mentally preoccupied with social ranking of themselves against others experienced a greater drive for thinness when their level of self-compassion was low (Pinto-Gouveia et al., 2014). Alternatively, higher self-compassion is related to lower social comparison which is associated with greater body appreciation (Andrew et al., 2016) and less appearance evaluation (Ntoumanis et al., 2020). This suggests that social appearance comparisons may be relevant for a self-compassion intervention on body dissatisfaction, which warrants further research.

**Thin-ideal internalization.** Internalizing the images of very slender women that are portrayed in the media may also play an important role in the relationship between self-compassion and body dissatisfaction. Thin-ideal internalization has been reported as a casual risk factor for poor body image and disordered eating (Thompson & Stice, 2001). Accordingly, greater thin-ideal internalization at the start of a school term was found to be associated with higher levels of dieting, excessive exercise, and body dissatisfaction seven months later among undergraduate women (Homan, 2010). The relationship between thin-ideal internalization and body dissatisfaction is strengthened by factors such as greater body surveillance (Fitzsimmons-Craft et al., 2016; Fitzsimmons-Craft et al., 2012) and body comparison (Fitzsimmons-Craft et al., 2016). Thin-ideal internalization also acts as a moderator in the relationships relevant to social media use, including social comparisons and body dissatisfaction (Scully et al., 2020; Vartanian & Dey, 2013), and exposure to thin models and body-related anxiety (Dittmar & Howard, 2004).

Previous research demonstrated that higher self-compassion is associated with less thin-ideal internalization (Tylka et al., 2015) which, in turn, is linked to greater body appreciation (Andrew et al., 2016). Other research has shown that media images of the thin-ideal were less influential on internalization when self-compassion was high (Tylka et al., 2015). Unexpectedly, in the aforementioned study of induced self-compassion on social media by Slater and colleagues (2017), individuals with average to high levels of thin-ideal internalization demonstrated greater state self-compassion, body satisfaction, and mood when they viewed self-compassion statements, but not when they viewed neutral images. The authors speculate that individuals high on thin ideal internalization may be less likely to consume self-compassion content and, as such, the novelty of this content led to greater state changes in self-compassion and subsequent body

image and mood variables. Taken together, while those with higher levels of thin-ideal internalization may struggle to experience self-compassion, there is some evidence that a brief self-compassion intervention may be beneficial to these individuals.

**Physical appearance perfectionism.** Perfectionism about one's physical appearance (e.g., worry about imperfections and the desire for others to admire one's appearance; Yang & Stoeber, 2012) is another trait that may impact the relationship between self-compassion and body dissatisfaction. High levels of physical appearance perfectionism are associated with less appearance self-esteem, greater body dissatisfaction, and eating disorder symptomology (Stoeber & Yang, 2015; Yang & Stoeber, 2012). Additional research demonstrated that self-compassion mediates the relationship between maladaptive perfectionism and body image dissatisfaction (Barnett & Sharp, 2016) and moderates the relationship between physical appearance perfectionism and eating disorder symptoms (Bergunde & Dritschel, 2020). As it applies to social media use, McComb & Mills (2021) found that trait physical appearance perfectionism was especially problematic within the context of a forced comparison task to Instagram images of a thin-ideal model. More specifically, after the forced comparison task, individuals high on physical appearance perfectionism experienced greater appearance and weight dissatisfaction and less confidence compared to those low on physical appearance perfectionism. More research is needed to understand the relationship between physical appearance perfectionism, body image, and self-compassion, especially in the context of social media use.

### **Self-Compassion and Mood**

Similar to body image distress, previous research has reliably demonstrated that greater social media use is associated with lower mood (Berry et al., 2018) and well-being (Sharma et al., 2020). One study found that just 10 minutes of scrolling on social media can lead to increases

in negative mood – measured by levels depressed mood, anxious mood, anger, happiness, and confidence – compared to scrolling through a control website, especially for individuals high in appearance comparison tendencies (Fardouly et al., 2015). Passively scrolling through social media was associated with high levels of anxious and depressed mood in adolescent boys and girls, with more time spent scrolling being associated with even higher levels of emotional distress among adolescent girls (Thorisdottir et al., 2019). In an examination of Instagram use, young women reported that daily use was associated with lower levels of life satisfaction and higher negative mood (Garcia et al., 2021). Using ecological momentary assessment for five days, Bennett and colleagues (2020) found that individuals who spent more time on social media and used a variety of sites reported higher levels of negative affect, sadness, and feelings of guilt. Similarly, individuals who reported using multiple social media sites, and described this use as high in intensity, frequency, and duration, were more likely to report symptoms of depression and anxiety (Shensa et al., 2018). In longitudinal studies, Frison and Eggermont (2017) found that higher levels of browsing through Instagram, as opposed to posting, was associated with greater depressed mood 6 months later. In a 3-year longitudinal study of adolescents, time spent on social media was related to increases in depressed mood, as well as social and physical anxiety, with stronger associations among women than men (Thorisdottir et al., 2020). These studies demonstrate that the general use of social media has been associated with greater negative mood.

Expanding on this research, appearance-related images have been found to have additional negative effects. Exposure to images of attractive and thin celebrities and peers on social media results in lower mood – including the aforementioned dimensions of anxiety, depression, anger, happiness, and confidence – than non-appearance related content (Brown &

Tiggemann, 2016; Prichard et al., 2020). Kohler and colleagues (2021) found that scrolling through appearance-based images on Instagram led to greater decreases in positive mood (vigor and esteem-related affect), increases in negative mood (tension, anger, fatigue, depression, and confusion), and increases state anxiety than looking at images that were not appearance-related. This may, in part, be facilitated by the social comparisons people commonly make while using sites like Instagram (Hogue & Mills, 2019; McComb & Mills, 2021), which has been associated with negative mood (Fardouly et al., 2015; Fardouly et al., 2017). Accordingly, it is equally important that the efficacy of new body image interventions are also assessed for their effects on mood, as has been done in previous research (Stern & Engeln, 2018; Ziemer et al., 2019).

One such pathway may also be through fostering self-compassion. Several studies have demonstrated an inverse relationship between trait self-compassion and negative mood states, including depression, anxiety, and stress (Bakker et al., 2019; Fekete et al., 2021; Krieger et al., 2016; Lyvers et al., 2020). In a meta-analysis of 14 studies, Macbeth and Gumley (2012) found that higher levels of self-compassion were associated with lower levels of psychopathology, including negative mood states such as depression and anxiety. Even in the presence of a negative mood induction (e.g., listening to sad music), individuals with higher levels of trait self-compassion reported better mood recovery and less self-devaluation than those with low trait levels (Karl et al., 2018). The presence of this relationship suggests that fostering self-compassion may be beneficial to improving mood. Accordingly, Odou and Brinker (2015) found that completing an 8-minute self-compassion writing task following a negative mood induction led to increases in positive affect. This is important as one study found that the pathway between self-compassion and body appreciation was through increased positive affect (Schmidt et al.,

2019). Applications of self-compassion interventions for body image should examine the effects on mood.

### **Self-Compassion as a Body Image Intervention**

As reviewed above, the association between low levels of self-compassion and body dissatisfaction, as well as negative affect, is well-established in the literature. As such, researchers have begun to examine ways to use self-compassion as an intervention to improve body image and well-being more generally. Compassion focused therapy (Gilbert, 2014) aims to help individuals develop a supportive inner voice and new coping behaviours to respond to their internal experiences in an adaptive way. Through therapeutic strategies – including Socratic questioning, behavioural experiments, mindfulness, and expressive writing – this therapy can help address and lessen shame and self-criticism (Gilbert & Irons, 2015). This has been specifically applied to body image constructs including shame about one’s body. In a pilot study of compassion focused group therapy, completing this intervention was found to significantly reduce shame about body weight in obese individuals (i.e., body mass index greater than 30;  $d = 0.58$ ) after 12 sessions, which continued to increase at the three-month follow-up ( $d = 0.85$ ; Carter et al., 2020). Adopting the writing exercises from compassion-focused therapy, D’Silva and Kamble (2014) found that undergraduate students with higher levels of body dysmorphia (i.e., an intense preoccupation and often inaccurate perception of one’s body) reported significantly lower levels of body dysmorphia following the intervention. The authors posit that the intervention allowed participants to accept their body-related feelings and perceive their bodies from a more compassionate perspective which, in turn, reduced their body dysmorphia. While research on compassion focused therapy has begun to demonstrate some promising results, there are many interventions that implement self-compassion, such as mindfulness

practices, writing exercises, and guided discussions. In a systematic review of 25 compassion-based interventions, Carter and colleagues (2021) found that these interventions were effective in increasing general self-compassion and reducing body-related shame.

While both men and women experience body dissatisfaction, women are more likely to be preoccupied by thoughts about their body shape and weight and more likely to diet or restrict their eating (Dye, 2016). As such, most interventions have targeted women. Self-compassion interventions have been shown to decrease negative body image in women across multiple studies. A three-week self-compassion meditation program led to greater decreases in body dissatisfaction ( $d = 0.73$ ) and appearance-related appraisals of self-worth ( $d = 0.45$ ), as well as increased in body appreciation ( $d = 0.62$ ) and self-compassion ( $d = 0.82$ ), when compared to a waitlist control (Albertson et al., 2015). Similar findings have also been demonstrated over a one-week period, wherein the daily practice of a self-compassion meditation led to greater reductions in self-criticism ( $np^2 = 0.13$ ), appearance-related appraisals of self-worth ( $np^2 = 0.05$ ), and body surveillance ( $np^2 = 0.06$ ), as well as increased body appreciation ( $np^2 = 0.05$ ), compared to a waitlist control (Toole & Craighead, 2016). A 6-week program using an alternative delivery format – a mobile application that prompted participants with messages about self-compassion, body positivity, and the components of a healthy lifestyle, as well as meditations, quizzes about wellness topics, and gratitude journaling – led to greater self-compassion ( $np^2 = 0.04$ ) and appearance esteem ( $np^2 = 0.02$ ) compared to the control group (Rodgers et al., 2018). These interventions highlight the ability for a self-compassion intervention to improve body image and overall well-being.

**Self-compassion writing tasks.** Several self-compassion techniques are writing-based (Neff, 2022), which have the benefits of being easily disseminated, affordable, and accessible to

many individuals. For instance, when compared to a traditional expressive writing program and control writing program, writing for 20 minutes per week about self-compassion for three consecutive weeks led to increased self-compassion ( $np^2 = 0.05$ ; Ziemer et al., 2019). These increases in self-compassion furthermore predicted greater body appreciation, better quality of life related to their body image (e.g., engaging in physical exercise), and positive affect. Even among nontreatment seeking women with anorexia nervosa, completing a self-compassion writing task for two-weeks had positive effect on their overall well-being including increased self-compassion ( $r = .26$ ) and decreased shame ( $r = .32$ ), compared to a waitlist control (Kelly & Waring, 2018). Body image was not examined within this study.

Some researchers have begun to develop self-compassion interventions that incorporate the use of writing tasks specifically for women who endorsed body image concerns. For instance, Seekis and colleagues (2020) ran a 50-minute self-compassion group workshop that provided psychoeducation and skills about how to practice self-compassion towards one's body, including self-compassion writing exercises that fostered common humanity, mindfulness, self-kindness, and self-appreciation, as well as mindful exercises such as using physical touch to soothe distress and a compassionate body scan. Participants were then invited to participate in a private Facebook group where they could reflect on body-related experiences and the use of self-compassion strategies. The results demonstrated lower levels of body dissatisfaction ( $np^2 = .29$ ) and a trend towards less drive for thinness ( $np^2 = .09$ ) and greater self-compassion ( $np^2 = .03$ ), than those in a waitlist control. In a similar study designed for women with body image concerns, Toole and colleagues (2021) asked participants to complete a 45-minute workshop that provided psychoeducation on the harms of self-criticism and the components of self-compassion before writing a self-compassion letter to themselves that focused on addressing body image concerns.

Participants were then asked to practice daily self-compassion through a list of “self-care” activities for one week. This was compared to a dissonance-based intervention that asked participants to actively reject the thin-ideal both in-session through a written letter and daily practices that followed for one week, as well as a waitlist control. The researchers found that the self-compassion and dissonance-based interventions led to less body dissatisfaction ( $d = 0.73 - 1.15$ ) and appearance-contingent self-worth ( $d = -0.53 - -0.65$ ), as well as increased body appreciation ( $d = 0.52 - 0.63$ ), compared to the waitlist control (Toole et al., 2021). Notably, however, self-compassion was a mechanism of change in both intervention conditions suggesting that fostering self-compassion may be a powerful tool to addressing body image concerns.

**Brief intervention approaches.** As reviewed above, past research shows that intensive self-compassion training, including daily practice over days or weeks, can improve body image over time. However, in a meta-analysis of self-compassion interventions for body image, Turk and Waller (2020) found that the duration of intervention did not predict efficacy. As such, it is reasonable to explore the effectiveness of brief self-compassion writing interventions and their immediate effects on body image and mood. Brief interventions, sometimes referred to as “micro-interventions,” differ from standard intervention approaches in that they are designed to quickly administer resources that ought to have an immediate and positive effect on specific symptoms in the moment (Fuller-Tyszkiewicz et al., 2019). These types of interventions shift the focus from longer term improvements of a therapeutic approach (i.e., at follow-up) to immediate improvements that can be tied to treatment content. Brief activities designed for focused and immediate benefits have the potential to enhance accessibility to, and engagement in, mental health interventions (Atkinson & Diedrichs, 2020) and can establish cause and effect between targeted intervention content and a range of outcomes of interest (Zaunmüller et al., 2014).

In addition to the benefits of standard self-compassion intervention approaches, the positive effects of brief interventions on body image have also been established. In studies of women with breast cancer, who commonly experience body image distress, participating in a single-session 30-minute self-compassion writing task was shown to immediately improve body image distress ( $d = 0.25$ ) and body appreciation ( $d = 0.28$ ) to a greater extent than an expressive writing control condition (Sherman et al., 2018). Similarly, completing a 15 minute self- or body-compassion writing task led to greater increases in body satisfaction ( $d = 0.36$ ) and positive affect ( $d = 0.16$ ) relative to a control writing task about a positive event in one's life among female undergraduate students (Stern & Engeln, 2018). These studies demonstrate that single-session self-compassion exercises may be effective at immediately improving state body image and mood.

**Overcoming body-image threats.** Another way in which brief interventions can be implemented is for recovery from psychological distress, including threats to one's body image. More specifically, previous research has shown that brief self-compassion interventions can be effective at reducing body dissatisfaction that occurs in response to triggers. Seekis and colleagues (2017) examined the effectiveness of a self-compassion writing task in recovery from body dissatisfaction brought about by a negative body image induction, whereby participants imagined that an unflattering photograph of themselves had been posted to social media by a peer. A 15-minute self-compassion writing task led to greater body appreciation ( $d = 0.65$ ) and equivalent body satisfaction ( $d = 0.06$ ) compared to a self-esteem writing task. Both groups were superior to the neutral control writing task at improving body appreciation ( $d = 1.03$ ) and body satisfaction ( $d = 0.76$ ). Using a real-world negative body image induction, Moffitt and colleagues (2018) found that a brief self-compassion intervention decreased weight ( $np^2 = 0.10$ ) and

appearance dissatisfaction ( $np^2 = 0.07$ ) brought about by viewing magazine advertisements with images of slender and attractive women (i.e., thin-ideal images) to an extent greater than a self-esteem intervention or active control group. In that study, the intervention was a three-minute writing task that asked participants to express kindness, compassion, and understanding towards themselves regarding their weight, appearance, and body shape. Given that body image is reliably negatively affected by sociocultural factors, such as exposure to popular beauty ideals (Grosz et al., 2002), it is worthwhile to further investigate whether brief self-compassion interventions can be used to mitigate distress resulting from these experiences.

**Order of delivery.** As reviewed above, the evidence suggests that self-compassion interventions may be an effective and accessible tool to lessen the body image distress that occurs after social comparison to thin ideal images on Instagram (Brown & Tiggemann, 2016). However, there has been no research to date on whether practicing self-compassion exercises might actually mitigate or *prevent* body image distress resulting from known triggers. In other words, a self-compassion writing task could be used *prior* to Instagram use as a way to prevent body image distress from being elicited in the first place. This would be a novel addition to the literature on self-compassion and body image.

*Antecedent-focused emotional regulation.* One reason to examine whether a brief self-compassion intervention is effective prior to exposure to idealized body images is based on Gross's (1998) process model of emotion. In the face of external stimuli that trigger distress, Gross described two types of emotional regulation processes. Antecedent-focused emotional regulation refers to the mitigation of emotional cues before the behavioural, experiential, or physiological emotional response tendency occurs. This might include avoiding emotional triggers, distracting oneself from the content, or reappraising the meaning of the cue. On the

other hand, response-focused emotional regulation refers to the varied expression of the emotional response, such as intensifying, prolonging, or suppressing. Gross (1998) asked participants to watch a short film that was intended to elicit disgust and either reappraise the content as unemotional (e.g., “think about what you are seeing objectively”; antecedent-focused emotional regulation) or suppress the emotions that they are experiencing (e.g., “try your best not to let those feelings show”; response-focused emotional regulation). Compared to participants who watched the film without an emotional regulation strategy (i.e., control group), those in the reappraisal condition reported less behavioural and experiential markers of emotion, whereas those in the suppression condition reported less behavioural, but more physiological, markers of emotions. Gross (1998) posits that antecedent-focused emotional regulation may be preferable to response-focused emotional regulation for providing relief from negative psychological experiences. In other words, intervening before a trigger of body image distress is worthwhile to investigate as a way to reduce negative body image following social media exposure. A written self-compassion intervention has yet to be examined before the use of a body-image threat such as social media. However – pulling on research from antecedent-focused emotional regulation – completing such an intervention *before* engaging with social media may allow individuals to express more compassion towards their bodies and, subsequently, lead to less body dissatisfaction and negative affect.

## Research Questions and Hypotheses

Putting it all together, the literature reviewed above has demonstrated a reliable negative relationship between self-compassion and body dissatisfaction, through direct and indirect pathways (i.e., stronger relationships to protective factors and weaker relationships to risk factors). This relationship has previously been examined in the context of body image threats, including social media exposure, and with moderating personality variables, such as social appearance comparisons, thin ideal internalization, and physical appearance perfectionism. In addition to body image, self-compassion may also be relevant to positive and negative affect, including feelings of depression, anxiety, happiness, and confidence. Previous research has established that a self-compassion based intervention may be a viable avenue for addressing body dissatisfaction. Moreover, there may be a benefit to applying such an intervention to body dissatisfaction arising from social media use.

This dissertation consists of a set of studies aimed at investigating whether a brief, writing-based self-compassion intervention can mitigate body dissatisfaction brought about by Instagram use among women. Specifically, two randomized, controlled studies addressed whether writing a 3-minute self-compassion statement either after (Study One) or before (Study Two) comparing oneself to thin-ideal images on Instagram can reduce weight and appearance dissatisfaction, as well as worsened mood (Brown & Tiggemann, 2016; Fardouly et al., 2015; Prichard et al., 2020), which are the outcome variables most reliably adversely impacted by exposure to idealized body images. The dissertation also investigated the differential effectiveness of this intervention as a function of individual difference moderators such as trait self-compassion, social appearance comparison, thin-ideal internalization, and physical appearance perfectionism. A self-compassion intervention was compared against a neutral

control task (i.e., a simple word sorting task) in both studies. The participants were limited to women, given the aforementioned propensity towards problematic body dissatisfaction that exists among women (Dye, 2016), as well as gender-based differences in body-ideals that may potentially confound the findings of this study (see Calogero & Thompson (2010) for a review of gender differences in body image).

The primary hypothesis was that women who received the self-compassion intervention would experience less weight and appearance dissatisfaction after induced comparisons to thin-ideal images on Instagram than those who participated in a neutral-word sorting task (H1). It was further expected that this intervention would improve mood – including anxious mood, depressed mood, happiness, and confidence – over and above the control condition task (H2). Moreover, it was anticipated that this intervention would be especially beneficial for individuals high in trait self-compassion (H3). Lastly, it was expected that the self-compassion intervention would be less effective for those with a propensity towards social appearance comparison (H4), physical appearance perfectionism (H5), and thin-ideal internalization (H6). These hypotheses were tested in two studies where the intervention task either came after social media use (Study One) or before (Study Two). Given the novelty of testing a self-compassion intervention as a “buffer” to Instagram use, no specific hypotheses were made regarding differing effects between the two studies.

## Study One

Study One investigated whether a brief self-compassion writing intervention can be used following a forced-comparison exposure task to thin-ideal images on Instagram to mitigate the negative effects of social media on body image and mood (Brown & Tiggemann, 2016; McComb & Mills, 2021; McComb et al., 2021; Saiphoo & Zahra, 2019). Similar to the design by Moffitt and colleagues (2018), female participants completed a three-minute writing task that asked participants to express kindness, compassion, and understanding towards themselves regarding their weight, appearance, and body shape. This was compared to a neutral-word sorting task that served as a control condition. This study aimed to determine whether a self-compassion intervention delivered after social media use could be used as a tool to recover from associated psychological distress.

## Method

### Participants

Participants were recruited through an undergraduate research pool at a Canadian university and Amazon Mechanical Turk, an online crowdsourcing marketplace that allows participants to complete studies. Inclusion criteria included being female between the ages 18 to 55 years, which is representative of 86% of Instagram users (Statista, 2022), and residing within Canada or the United States. Altogether, 221 participants completed the experiment. However, 19 participants were deemed to be ineligible because they failed to properly complete the self-compassion or sorting tasks and 24 participants did not complete the post-experiment questionnaires. Therefore, the final sample for data analysis consisted of 178 women (84 participants from Amazon Mechanical Turk and 94 participants from the undergraduate research pool). Participant ages in the final sample ranged from 18-55 years ( $M = 28.31$ ,  $SD = 10.81$ ). The

self-reported ethnic distribution of the final sample was 49% Caucasian, 19% South Asian, 8% Black, 7% Middle Eastern, 5% East Asian, 3% Hispanic/Latino, 8% identified as “Other”.

Participants’ self-reported body mass index ( $BMI = kg/m^2$ ) scores ranged from 13.74 to 56.69 ( $M = 25.26$ ,  $SD = 7.66$ ). The mean BMI score fell in the “overweight range” (25-29.9) according to World Health Organization guidelines (World Health Organization, 2019). The majority of the sample (41%) had completed high school, 23% had a 4-year university as their highest level of education, 20% had completed some college, 8% had completed a two-year college or university degree, 7% had completed a professional degree, and less than 1% had less than high school.

## **Materials**

**Instagram images.** All participants were asked to view 12 thin ideal images sourced from a public Instagram account and to compare various parts of their own body to the body parts of the target woman. The images were intended to be of a highly attractive woman who represents the thin ideal body type and who is not a celebrity. To select the stimuli for the study, 52 photographs taken from four women’s public Instagram accounts (13 images of each woman) were pilot tested. Each of the selected women had fewer than 20,000 followers on Instagram. Women with fewer than 20,000 followers were chosen in order to decrease the likelihood that participants would already be familiar with the target women prior to the experiment, and therefore already habituated to the images, and also to avoid the effects of celebrity worship (Brown & Tiggemann, 2016) or parasocial relationships (Young et al., 2012) on body image. For each woman, four of the images consisted of the woman wearing a bikini, three were selfies of the face and shoulders, and six were full-body shots of the woman wearing clothes. There were no other people in any of the images other than the target woman. Seven members of the researchers’ lab (women between the ages of 18-34) rated each of the images on visual analogue

scales for attractiveness (0= *extremely unattractive* and 100= *extremely attractive*) and representativeness of the thin ideal (0 = *extremely unrepresentative* and 100 = *extremely representative*). The stimuli chosen for the study were of the model whose images were rated as the most attractive ( $M = 88.14$ ,  $SD = 10.04$ ) and the most representative of the thin ideal ( $M = 95.71$ ,  $SD = 4.50$ ). The chosen images were copied and pasted into a bogus Instagram profile created for the study so that each image was displayed within the Instagram context, but did not have any “likes” or comments beneath it, so as not to confound the results of the study.

## Measures

**State body image.** The procedure of Tiggemann and McGill (2004) was adapted to use visual analogue scales (VAS) to measure state weight dissatisfaction and appearance dissatisfaction. Each scale consisted of a 100 mm line with a slider bar, and endpoints that were labelled as ‘*none*’ and ‘*very much*’. Participants were asked to report how they feel “right now” in regard to feelings of dissatisfaction with their weight and appearance. Responses to the scales could range from 0 to 100, with higher scores indicating stronger feelings. Scales of this type have long been used in experimental research to reliably assess pre- and post- fluctuations in psychological states (Heinberg & Thompson, 1995). Visual analogue scales are advantageous because they can be filled out quickly, are resistant to recall bias since the line is not numbered, and are sensitive to small changes across repeated measurement.

**State mood.** As with state body image, the procedure of Tiggemann and McGill (2004) was adapted to use several visual analogue scales (VAS) to measure state mood. Each scale consisted of a 100 mm line with a slider bar, and endpoints that were labelled as ‘*none*’ and ‘*very much*’. Participants were asked to report how they feel “right now” in regard to feelings of anxious mood, depressed mood, happiness, and confidence by moving the slider to the point on

the line that best depicts how they are feeling in that moment. Responses to the scales could range from 0 to 100, with higher scores indicating stronger feelings.

**Trait self-compassion.** To measure levels of trait self-compassion, the 12 item Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011) was administered. Participants were asked to report how they typically act towards themselves in difficult situations by responding on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). The Self-Compassion Scale-Short Form consists of six subscales: self-kindness, self-judgement, common humanity, isolation, mindfulness, and over-identified. In the present study, only the total score was used and was based on the total mean score of all items. The alpha reliability estimate for the total scale was .67 in the current sample, which indicated good internal consistency.

**Trait appearance comparison tendency.** The 11-item Physical Appearance Comparison Scale-Revised (Schaefer & Thompson, 2014) was used to measure participants' tendency to engage in appearance comparisons. Participants were asked to indicate using a 5-point scale (0 = *never*, 4 = *always*) how often they make appearance comparisons to others in various contexts (e.g., *When I'm shopping for clothes, I compare my weight to the weight of others*). Scores for each item were summed and higher scores represented a greater tendency to compare one's appearance to others. The alpha reliability estimate for the scale was .97 in the current sample, which indicated very good internal consistency.

**Physical appearance perfectionism.** The 12-item Physical Appearance Perfectionism Scale (PAPS; Yang & Stoeber, 2012) was used to measure trait physical appearance perfectionism. The scale is composed of two subscales that pertain to appearance: worry about imperfection (e.g., *I worry that my appearance is not good enough*) and hope for perfection (e.g., *I hope that I look attractive*). Participants were asked to respond how much they agreed with

each item on a 5-point scale (1=*strongly disagree* to 5= *strongly agree*), with higher scores indicating greater perfectionism towards their physical appearance. The alpha reliability estimate for the scale was .88 in the current sample, which indicates very good internal consistency.

**Thin ideal internalization.** To measure the extent to which participants had internalized the thin media ideal, the 9-item General Internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3; Thompson et al., 2004) was used. Participants were asked to respond to each item (e.g., *I would like my body to look like the people who are on TV*) using a 5-point scale ranging from 1 = *strongly disagree* to 5= *strongly agree*. Higher scores indicate greater thin ideal internalization. The alpha reliability estimate for the scale was .88 in the current study, which indicated very good internal consistency.

## **Procedure**

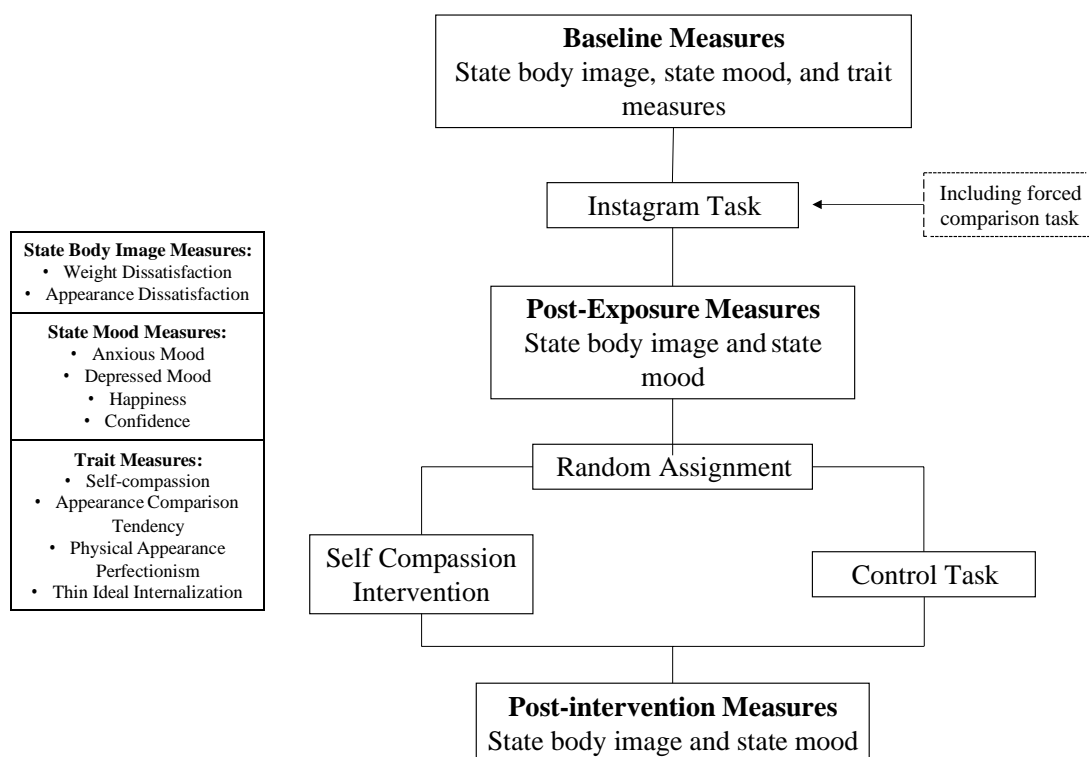
Ethics approval was granted by the York University Human Participants Review Committee. Eligible participants could see and sign up for the study online through the undergraduate research pool or Amazon Mechanical Turk. Previous research has demonstrated that demand characteristics may influence variables such as body satisfaction when participants are aware they are completing a body image intervention (Mills et al., 2002). Therefore, the study was advertised as a study about the relationship between personality traits and Instagram use. Upon sign up, participants provided informed consent and completed baseline measures of their state body image and mood, trait self-compassion levels, trait appearance comparison tendencies, trait physical appearance perfectionism, and thin ideal internalization. All participants were then shown on the computer screen the 12 images of the thin ideal target woman for exactly 30 seconds per image. Participants were asked to compare the size of their body parts to the size of the Instagram target woman's body parts while they viewed the photos.

More specifically, participants were asked to indicate whether their thighs, arms, butt, waist, hips, biceps, breasts, legs, and stomach were *much smaller*, *smaller*, *about the same size*, *larger*, or *much larger* than the corresponding body parts of the target women. They were also asked to indicate if their face and overall physical appearance was *much more attractive*, *slightly more attractive*, *about the same level of attractiveness*, *less attractive*, or *much less attractive* than the target woman's. Forced comparisons of this type have been used in previous studies that have investigated the impact of thin ideal imagery on body image (McComb & Mills, 2021; Mills et al., 2002; Tiggemann & Polivy, 2010; Tiggemann & Slater, 2004). A forced comparison task was used to ensure that participants were actively engaging in viewing the photos, rather than passively viewing them. Also, it allowed for an investigation of the effectiveness of a self-compassion task in mitigating negative changes to body image as a consequence of social comparison to thin ideal imagery.

Immediately after viewing the images and comparing themselves, participants completed the same measures of state mood and body image at baseline (post-exposure assessment). Then, participants were randomly assigned to either the experimental condition in which they completed a brief self-compassion writing task or to the control condition in which they performed a simple sorting task. Following the methodology of Breines and Chen (2012) and Moffit and colleagues (2018), those in the self-compassion condition received the following instructions: "For the next 3 minutes write a paragraph to yourself (as if you are addressing yourself) expressing kindness, compassion, and understanding towards yourself regarding your weight, appearance, and body shape." Those in the control condition engaged in a simple sorting task where they were asked to drag words from a list and sort the words into two categories (e.g., colours or shapes). This condition was meant to control for the passage of time (i.e., to equal the

intervention task) and possible rumination about body image. Immediately after completion of their assigned tasks all participants then completed the same measures of state mood and body image for the third time (post-intervention assessment), as well as some demographic questions. Finally, participants were debriefed and were compensated for their participation. See Figure 1 for a visual schematic of the procedure.

**Figure 1.** *Visual Schematic of the Study One Procedure.*



## Statistical Analyses

All statistical analyses were conducted using SPSS version 25. A series of 2 (condition: self-compassion versus control; between subjects) x 3 (time: baseline, post-exposure, and post-intervention; within subjects) mixed ANOVAs were conducted on the outcome measures of interest (i.e., state body image and mood items). State body image was the primary outcome variable and was analyzed at an alpha of less than 0.05; to control for Type I error, the secondary

outcome variable of mood was analyzed with a Bonferroni correction ( $p < 0.013$ ). Significant time effects were followed up with pairwise comparisons with a Sidak adjustment. Significant condition x time interactions were followed up with paired samples  $t$ -tests with Bonferroni correction ( $p < 0.025$ ) to investigate within-subject differences. Partial eta squared (partial  $\eta^2$ ) effect sizes (small = .01, medium = .06, and large = .14) were reported for the overall ANOVA results (Cohen, 1969). An a priori sample size analysis using G\*Power 3.1 (Faul et al., 2007) revealed that 18 participants per condition would provide sufficient power (0.8) to detect a similar effect size (.33) to that found by Moffit and colleagues (2018) at an alpha of .05 using a mixed ANOVA. Given that Moffit and colleagues' (2018) study had three conditions, extra participants were run to adjust for the current study being two groups, as well as to allow for possible missing data or exclusions and moderation analyses.

To test whether trait self-compassion, appearance comparison tendencies, physical appearance perfectionism, or thin ideal internalization moderated the relationships between experimental condition and post-intervention state mood and body image, a series of moderated regression analyses, covarying for baseline values, were conducted in the SPSS macro PROCESS version 3.2 (Hayes, 2017). Model 1 was tested, which included one outcome variable, one predictor, and one moderator. The six post-intervention mood and body image scores were used as outcome variables, experimental condition as the predictor, and each trait variable as the moderator. Significant interactions were followed up with simple slopes analyses. The simple slopes analyses tested whether experimental condition had an effect on post-intervention state mood and body image outcomes at low (1 SD below the mean), moderate (mean), and high (1 SD above the mean) levels of the trait variable. Marginally significant effects (i.e.,  $p < .05$  to

.075) are reported for thoroughness. Preliminary analyses were conducted prior to running the regression analyses to ensure that no data assumptions had been violated.

## Results

### Baseline Differences between Conditions

One-way ANOVAs showed that the two experimental conditions did not differ on BMI,  $F(1, 173) = .269, p = .604$ , age,  $F(1, 173) = .319, p = .573$ , or baseline levels of weight dissatisfaction,  $F(1, 177) = .454, p = .501$ , appearance dissatisfaction,  $F(1, 177) = .013, p = .908$ , anxious mood,  $F(1, 177) = .128, p = .721$ , depressed mood,  $F(1, 177) = .389, p = .534$ , happiness,  $F(1, 177) = .122, p = .738$ , and confidence,  $F(1, 177) = .845, p = .359$ . The two conditions also did not differ on levels of trait self-compassion,  $F(1, 177) = .001, p = .979$ , appearance comparison tendencies,  $F(1, 177) = .000, p = .998$ , physical appearance perfectionism,  $F(1, 177) = .055, p = .814$ , and thin ideal internalization,  $F(1, 177) = .093, p = .760$ . As such, random assignment to experimental condition successfully resulted in equivalent groups on these variables. See Table 1 for a summary of means, standard deviations, and interaction effects. See Table 2 for correlations among all variables.

Table 1.  
Means and Standard Deviations for Full Sample and by Condition for Study One

Measures	Full Sample		Intervention		Control		<i>F</i>	Interaction Effect		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>df</i>	<i>p</i>	<i>Partial n<sup>2</sup></i>
Body Image										
Weight Dissatisfaction							0.43	1.71	.617	.002
Baseline	43.86	35.73	46.51	38.25	41.73	33.61				
Post-Exposure	46.92	37.11	51.06	37.75	43.59	36.44				
Post-Intervention	41.57	35.53	45.46	36.85	38.43	34.31				
Appearance Dissatisfaction							0.12	1.77	.861	.001
Baseline	43.29	32.95	43.68	33.68	42.97	32.52				
Post-Exposure	46.41	34.93	47.58	35.12	45.46	34.93				
Post-Intervention	40.22	33.89	41.14	33.27	39.47	34.53				
Mood										
Anxiety							1.21	2	.300	.007
Baseline	31.45	31.75	32.58	32.65	30.56	31.16				
Post-Exposure	30.76	30.98	34.43	32.64	27.86	29.44				
Post-Intervention	27.88	30.62	30.31	32.36	25.95	29.18				
Depressed Mood							0.72	1.84	.476	.004
Baseline	21.53	27.62	23.10	29.99	20.23	25.61				
Post-Exposure	27.21	31.59	30.30	34.58	24.68	28.85				
Post-Intervention	22.70	28.32	23.21	29.99	20.46	26.97				
Happiness							11.18	1.91	<.001*	.060
Baseline	53.17	29.18	52.06	29.89	54.08	28.71				
Post-Exposure	42.56	30.21	43.54	31.24	41.75	29.47				
Post-Intervention	45.24	32.39	51.22	33.74	40.31	30.53				
Confidence							5.17	1.93	.007*	.029
Baseline	46.89	28.69	44.70	27.90	48.72	29.35				
Post-Exposure	35.59	30.51	36.31	30.05	34.98	31.03				
Post-Intervention	42.67	31.89	46.45	31.47	39.52	32.07				
Moderation Variables										
Trait Self-Compassion	34.50	8.72	34.48	9.02	34.52	8.50				

Social Appearance Comparison	23.98	12.48	23.98	12.89	23.98	12.20
Physical Appearance Perfectionism	41.84	8.42	42.00	8.47	41.70	8.41
Thin Ideal Internalization	27.08	10.01	26.83	10.59	27.29	9.55

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*Note.* \* = Interaction is significant at  $p < .05$



Baseline Anxiety	.199 **	.179 *	.214 **	.364 **	.241 **	.293 **	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Post-Exposure Anxiety	.341 **	.386 **	.387 **	.516 **	.457 **	.470 **	.818 **	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Post-Intervention Anxiety	.236 **	.301 **	.352 **	.433 **	.377 **	.419 **	.773 **	.834 **	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Baseline Depressed Mood	.332 **	.367 **	.384 **	.498 **	.409 **	.423 **	.586 **	.618 **	.557 **	--	--	--	--	--	--	--	--	--	--	--	--	--
Post-Exposure Depressed Mood	.428 **	.543 **	.510 **	.581 **	.615 **	.564 **	.473 **	.687 **	.603 **	.794 **	--	--	--	--	--	--	--	--	--	--	--	--
Post-Intervention Depressed Mood	.371 **	.476 **	.478 **	.493 **	.513 **	.518 **	.472 **	.638 **	.648 **	.794 **	.881 *	--	--	--	--	--	--	--	--	--	--	--
Baseline Happiness	-.176 *	-.145	-.089	-.276 **	-.168 *	-.165 *	-.217 **	-.259 **	-.183 *	-.281 **	-.298 **	-.259 **	--	--	--	--	--	--	--	--	--	--
Post-Exposure Happiness	-.231 **	-.280 **	-.209 **	-.384 **	-.352 **	-.288 **	-.210 **	-.336 **	-.246 **	-.352 **	-.480 **	-.381 **	.823 **	--	--	--	--	--	--	--	--	--
Post-Intervention Happiness	-.148 *	-.189 *	-.130	-.266 **	-.238 **	-.206 **	-.212 **	-.265 **	-.302 **	-.324 **	-.392 **	-.371 **	.760 **	.836 **	--	--	--	--	--	--	--	--
Baseline Confidence	-.172 *	-.144	-.104	-.349 **	-.226 **	-.189 *	-.297 **	-.319 **	-.223 **	-.270 **	-.298 **	-.268 **	.708 **	.688 **	.598 **	--	--	--	--	--	--	--

Post-Exposure Confidence	-.339 **	-.403 **	-.320 **	-.454 **	-.474 **	-.392 **	-.140	-.303 **	-.231 **	-.237 **	-.424 **	-.325 **	.601 **	.789 **	.682 **	.709 **	--	--	--	--	--	--
Post-Intervention Confidence	-.214 **	-.248 **	-.187 *	-.280 **	-.284 **	-.253 **	-.124	-.178 *	-.220 **	-.206 **	-.295 **	-.267 **	.658 **	.719 **	.838 **	.667 **	.783 **	--	--	--	--	--
Trait Self-Compassion	-.353 **	-.340 **	-.344 **	-.502 **	-.420 **	-.399 **	-.355 **	-.445 **	-.408 **	-.452 **	-.531 **	-.458 **	.359 **	.411 **	.417 **	.423 **	.453 **	.417 **	--	--	--	--
Social Appearance Comparison	.525 **	.575 **	.565 **	.557 **	.591 **	.564 **	.215 **	.350 **	.353 **	.308 **	.439 **	.360 **	-.118 **	-.242 **	-.202 **	-.128 **	-.348 **	-.280 **	-.365 **	--	--	--
Physical Appearance Perfectionism	.464 **	.545 **	.508 **	.641 **	.668 **	.602 **	.266 **	.426 **	.358 **	.373 **	.550 **	.473 **	-.222 **	-.379 **	-.306 **	-.316 **	-.483 **	-.346 **	-.498 **	.605 **	--	--
Thin Ideal Internalization	.312 **	.378 **	.344 **	.444 **	.487 **	.438 **	.186 *	.278 **	.278 **	.233 **	.380 **	.335 **	-.121 **	-.251 **	-.207 **	-.087 **	-.314 **	-.216 **	-.237 **	.637 **	.587 **	--

Note. \* = Correlation is significant at  $p < .05$  and \*\* = Correlation is significant at  $p < .01$ .

## H1: Effect of Condition on Body Image Over Time

**Weight dissatisfaction.** Results indicated that there was a main effect of time on state weight dissatisfaction,  $F(1.71, 295.78) = 6.09, p = .004, \text{partial } \eta^2 = .034^1$ . Pairwise comparisons showed that irrespective of condition, state weight dissatisfaction did not change from baseline to post-exposure ( $p = .167$ ), but significantly decreased from post-exposure to post-intervention ( $p < .001$ ). There was no significant difference between baseline and post-intervention ( $p = .502$ ). There was no main effect of condition on state weight dissatisfaction,  $F(1, 173) = 1.54, p = .217, \text{partial } \eta^2 = .009$ . There was also no significant interaction between condition and time,  $F(171, 295.73) = 0.43, p = .616, \text{partial } \eta^2 = .002$ .

**Appearance dissatisfaction.** Results indicated that there was a main effect of time on state appearance dissatisfaction,  $F(1.77, 305.66) = 9.21, p < .001, \text{partial } \eta^2 = .051^2$ . Pairwise comparisons showed that state appearance dissatisfaction did not change from baseline to post-exposure ( $p = .139$ ), but significantly decreased from post-exposure to post-intervention ( $p < .001$ ). There was no significant difference between baseline and post-intervention ( $p = .145$ ). There was no main effect of condition on state appearance dissatisfaction,  $F(1, 173) = 0.09, p = .760, \text{partial } \eta^2 = .001$ . There was also no significant interaction between condition and time,  $F(1.77, 305.66) = 0.12, p = .861, \text{partial } \eta^2 = .001$ .

## H2: Effect of Condition on Mood Over Time

**Anxious mood.** Results revealed that there was a main effect of time on state anxious mood,  $F(2, 344) = 3.29, p = .039, \text{partial } \eta^2 = .019$ . Pairwise comparisons showed that anxious

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<sup>1</sup>Mauchly's test indicated that the assumption of sphericity had been violated in the weight dissatisfaction analyses,  $\chi^2(2) = 32.04, p < .001$ , and so the degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .86$ ).

<sup>2</sup>Mauchly's test indicated that the assumption of sphericity had been violated in the appearance dissatisfaction analyses,  $\chi^2(2) = 24.35, p < .001$ , and so the degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .88$ ).

mood did not significantly differ between any of the time points. There was no main effect of condition on state anxious mood,  $F(1, 172) = 0.95, p = .332$ , partial  $\eta^2 = .005$ . There was also no significant interaction between condition and time,  $F(2, 344) = 1.21, p = .300$ , partial  $\eta^2 = .007$ .

**Depressed mood.** Results indicated that there was a main effect of time on depressed mood,  $F(1.84, 311.46) = 12.06, p < .001$ , partial  $\eta^2 = .067^3$ . Pairwise comparisons showed that depressed mood significantly increased from baseline to post-exposure ( $p < .001$ ) and significantly decreased from post-exposure to post-intervention ( $p < .001$ ) across conditions. Scores at baseline and post-intervention were not significantly different from one another ( $p = .999$ ). There was no main effect of condition on depressed mood,  $F(1, 169) = 0.79, p = .376$ , partial  $\eta^2 = .005$ . There was also no significant interaction between condition and time,  $F(1.84, 311.46) = 0.72, p = .476$ , partial  $\eta^2 = .004$ .

**Happiness.** Results indicated that there was a main effect of time on state happiness,  $F(1.91, 333.80) = 28.98, p < .001$ , partial  $\eta^2 = .142^4$ . The main effect of time was qualified by a significant interaction between condition and time on state happiness,  $F(1.91, 333.80) = 11.18, p < .001$ , partial  $\eta^2 = .060$ . Paired sample  $t$ -tests revealed that, for individuals in the control condition, state happiness decreased from baseline to post-exposure,  $t(96) = 6.58, p < .001$ , but did not change from post-exposure to post-intervention,  $t(96) = 0.89, p = .374$ . Accordingly, post-intervention scores were significantly lower than baseline happiness,  $t(96) = 6.60, p < .001$ . In the self-compassion condition, state happiness decreased from baseline to post-exposure,  $t(79) = 4.59, p < .001$ , and then significantly increased from post-exposure to post-intervention,  $t$

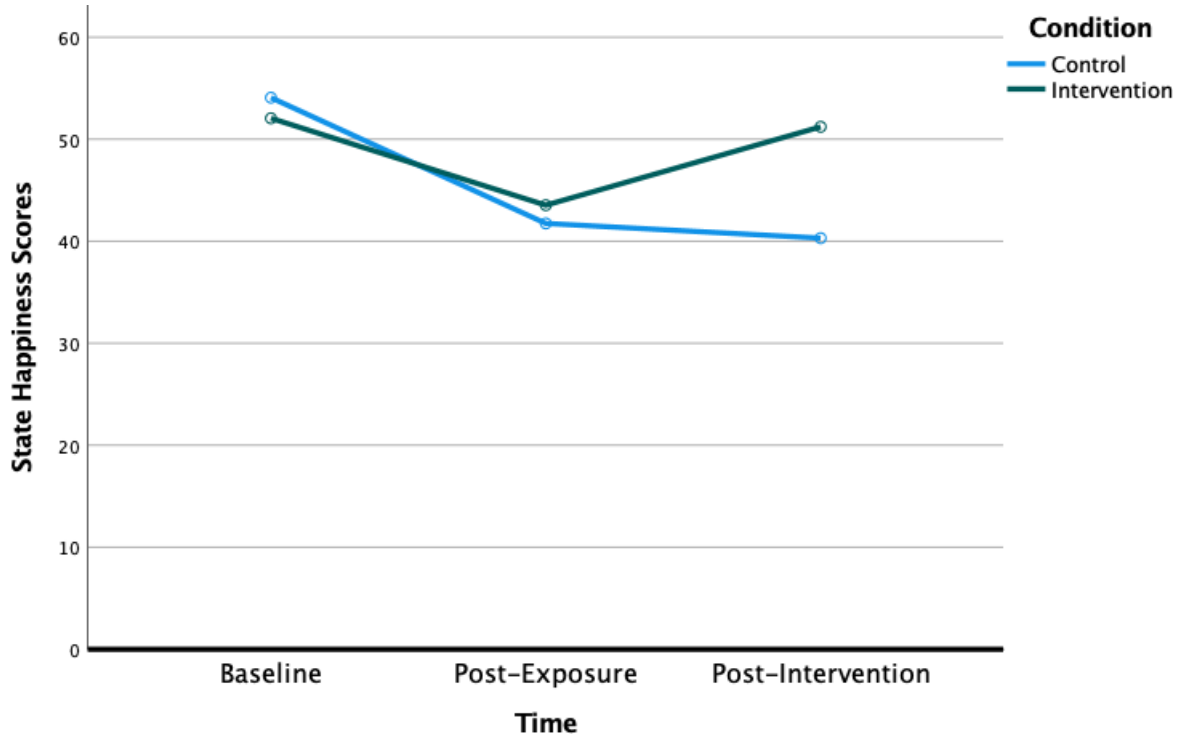
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<sup>3</sup> Mauchly's test indicated that the assumption of sphericity had been violated in the depressed mood analyses,  $\chi^2(2) = 14.96, p < .001$ , and so the degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .92$ ).

<sup>4</sup> Mauchly's test indicated that the assumption of sphericity had been violated in the happiness analyses,  $\chi^2(2) = 8.66, p = .013$ , and so the degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .95$ ).

(79) = 3.58,  $p = .001$  (see Figure 2). Post-intervention scores did not differ from baseline  $t(80) = 0.54$ ,  $p = .594$ . There was no main effect of condition on state happiness,  $F(1, 175) = 0.68$ ,  $p = .411$ , partial  $\eta^2 = .004$ .

**Figure 2.** Changes in State Happiness



*Note.* State happiness was scored on a scale from 0-100

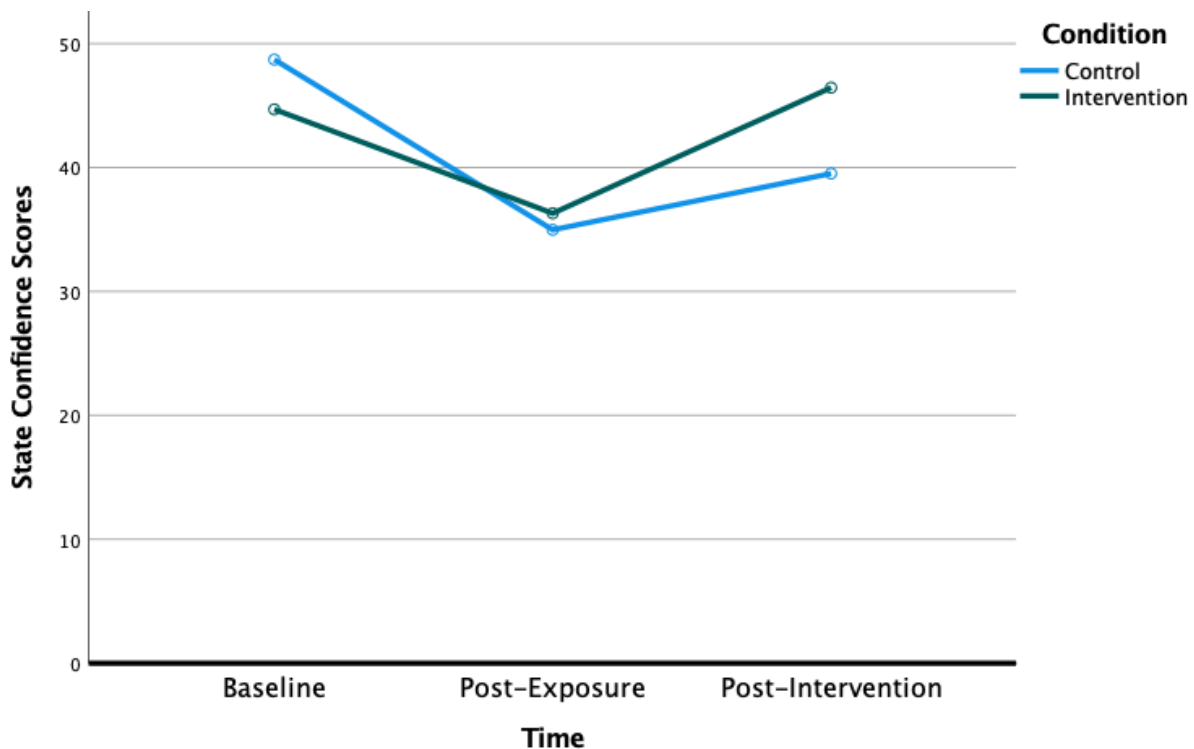
**Confidence.** Results indicated that there was a main effect of time,  $F(1.93, 335.08) = 21.88$ ,  $p < .001$ , partial  $\eta^2 = .112^5$ . The main effect of time was qualified by a significant interaction between condition and time,  $F(1.93, 335.08) = 5.17$ ,  $p = .007$ , partial  $\eta^2 = .029$ .

Paired sample  $t$ -tests revealed that state confidence significantly decreased from baseline to post-exposure,  $t(95) = 5.41$ ,  $p < .001$ , and did not change from post-exposure to post-intervention,  $t$

<sup>5</sup>Mauchly's test indicated that the assumption of sphericity had been violated in the confidence analyses,  $\chi^2(2) = 6.80$ ,  $p = .033$ , and so the degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .96$ ).

(95) = 2.05,  $p = .043$ , for individuals in the control condition. Confidence scores at post-intervention were significantly lower than confidence scores at baseline,  $t(96) = 3.52, p = .001$ . In the self-compassion condition, state confidence decreased from baseline to post-exposure,  $t(79) = 3.88, p < .001$ , and significantly increased from post-exposure to post-intervention,  $t(79) = 4.80, p < .001$ . Post-intervention scores did not differ from baseline,  $t(80) = 0.77, p = .441$  (see Figure 3). There was no main effect of condition,  $F(1, 174) = 0.15, p = .734$ , partial  $\eta^2 = .001$ .

**Figure 3.** Changes in State Confidence



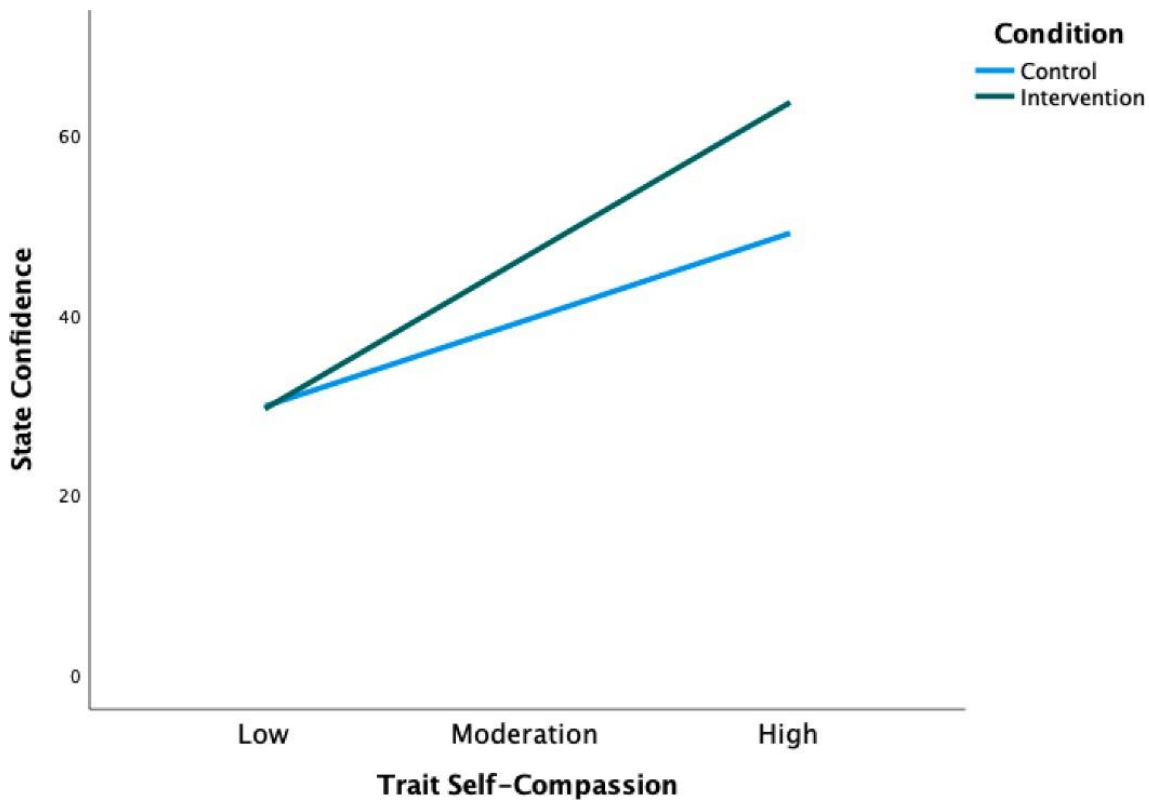
*Note.* State confidence was scored on a scale from 0-100

### H3: Role of Trait Self-Compassion as a Moderator

Moderated regression analyses were conducted to examine whether levels of trait self-compassion moderated the relationship between experimental condition and post-intervention body image and mood scores. Across the two conditions, trait self-compassion was not a significant predictor of the post-intervention body image variables. However, it significantly

predicted post-intervention mood outcomes, such that higher levels of trait self-compassion were associated with lower levels of anxious mood and depressed mood and higher levels of happiness and confidence (see Table 3). A marginally significant interaction between condition and trait self-compassion was found for post-intervention confidence. More specifically, participants who reported moderate to high levels of self-compassion trended towards greater levels of confidence following the intervention than did those in the control condition (see Figure 4).

**Figure 4.** Low, moderate, and high levels of trait self-compassion for post-intervention state confidence scores



*Note.* State confidence was scored on a scale from 0-100

Table 3.

*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of trait self-compassion for post-intervention body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	2.99	3.21	0.93	.354
Trait self-compassion	-0.29	0.20	-1.47	.143
Condition x trait self-compassion	-0.14	0.37	-0.37	.711
<u>State appearance dissatisfaction</u>				
Condition	1.03	2.93	0.35	.726
Trait self-compassion	0.07	0.19	0.36	.717
Condition x trait self-compassion	-0.13	0.34	-0.38	.706
<u>State anxious mood</u>				
Condition	1.87	2.85	0.66	.512
Trait self-compassion	-0.53	0.17	-3.03	.003
Condition x trait self-compassion	-0.47	0.33	-1.44	.152
<u>State depressed mood</u>				
Condition	0.52	2.55	0.21	.838
Trait self-compassion	-0.40	0.16	-2.47	.015
Condition x trait self-compassion	-0.17	0.29	-0.57	.567
<u>State happiness</u>				
Condition	12.21	2.94	4.15	.000
Trait self-compassion	0.60	0.18	3.31	.001
Condition x trait self-compassion	0.54	0.34	1.60	.111
<u>State confidence</u>				
Condition	9.77	3.42	2.86	.005
Trait self-compassion	0.56	0.22	2.59	.010
Condition x trait self-compassion	0.75	0.39	1.91	.058
Low trait self-compassion	3.26	4.83	0.68	.500
Moderate trait self-compassion	9.77	3.42	2.86	.005
High trait self-compassion	16.28	4.83	3.37	.001

#### **H4: Role of Trait Appearance Comparison as a Moderator**

Moderated regression analyses were conducted to examine whether trait appearance comparison moderated the relationship between experimental condition and post-intervention body image and mood scores. Across the two conditions, higher levels of trait appearance

comparison were associated with more weight dissatisfaction, appearance dissatisfaction, anxious mood, and depressed mood, and lower levels of happiness and confidence (see Table 4). There were no significant condition by trait appearance comparison interactions for any state body image or mood outcomes, indicating that post-intervention body image and mood were not dependent upon participants' levels of trait appearance comparison tendencies in either condition.

#### **H5: Role of Trait Physical Appearance Perfectionism as a Moderator**

Moderated regression analyses were conducted to examine whether levels of trait physical appearance perfectionism moderated the relationship between experimental condition and post-intervention body image and mood scores. Across the two conditions, higher levels of trait physical appearance perfectionism were associated with more weight dissatisfaction, appearance dissatisfaction, anxious mood, and depressed mood, and lower levels of happiness and confidence (see Table 5). There were no significant condition by physical appearance perfectionism interactions for any state body image or mood outcomes, indicating that post-intervention body image and mood was not dependent upon participants' levels of trait physical appearance perfectionism in either condition.

#### **H6: Role of Trait Thin Ideal Internalization as a Moderator**

Moderated regression analyses were conducted to examine whether levels of trait thin ideal internalization moderated the relationship between experimental condition and post-intervention body image and mood scores. Across the two conditions, higher levels of trait thin ideal internalization were associated with more post-intervention weight dissatisfaction, appearance dissatisfaction, anxious mood, and depressed mood, and lower levels of happiness and confidence (see Table 6). There were no significant condition by thin ideal internalization

interactions for any body image or mood outcome, indicating that post-intervention body image and mood was not dependent upon participants' levels of trait thin ideal internalization in either condition.

Table 4.

*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of trait appearance comparison for post-intervention body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	3.29	3.10	1.06	.291
Trait appearance comparison	0.57	0.15	3.94	.000
Condition x trait appearance comparison	-0.01	0.25	-0.05	.961
<u>State appearance dissatisfaction</u>				
Condition	0.97	2.86	0.34	.734
Trait appearance comparison	0.42	0.14	3.04	.003
Condition x trait appearance comparison	0.10	0.23	0.42	.673
<u>State anxious mood</u>				
Condition	1.87	2.81	0.67	.507
Trait appearance comparison	0.48	0.12	4.18	.000
Condition x trait appearance comparison	-0.08	0.22	-0.35	.726
<u>State depressed mood</u>				
Condition	0.48	2.54	0.19	.850
Trait appearance comparison	0.29	0.11	2.69	.008
Condition x trait appearance comparison	0.00	0.20	0.01	.989
<u>State happiness</u>				
Condition	12.28	3.01	4.08	.000
Trait appearance comparison	-0.29	0.12	-2.39	.018
Condition x trait appearance comparison	-0.12	0.24	-0.50	.615
<u>State confidence</u>				
Condition	9.95	3.39	2.93	.004
Trait appearance comparison	-0.49	0.14	-3.62	.000
Condition x trait appearance comparison	-0.15	0.27	-0.56	.576

Table 5.

*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of physical appearance perfectionism comparison for post-intervention body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	2.98	3.12	0.96	.340
Physical appearance perfectionism	0.74	0.21	3.54	.001
Condition x physical appearance perfectionism	-0.28	0.37	-0.75	.456
<u>State appearance dissatisfaction</u>				
Condition	0.82	2.89	0.38	.778
Physical appearance perfectionism	0.52	0.22	2.31	.022
Condition x physical appearance perfectionism	0.03	0.34	0.10	.920
<u>State anxious mood</u>				
Condition	1.68	2.85	0.59	.556
Physical appearance perfectionism	0.59	0.18	3.38	.001
Condition x physical appearance perfectionism	0.10	0.34	0.29	.770
<u>State depressed mood</u>				
Condition	0.38	2.46	0.15	.879
Physical appearance perfectionism	0.68	0.16	4.34	.000
Condition x physical appearance perfectionism	-0.02	0.29	-0.06	.953
<u>State happiness</u>				
Condition	12.41	2.98	4.17	.000
Physical appearance perfectionism	-0.57	0.18	-3.12	.002
Condition x physical appearance perfectionism	0.08	0.35	0.23	.816
<u>State confidence</u>				
Condition	10.02	3.46	2.90	.004
Physical appearance perfectionism	-0.56	0.22	-2.61	.010
Condition x physical appearance perfectionism	-0.02	0.41	-0.05	.959

Table 6.

*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of trait thin ideal internalization for post-intervention body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	3.19	3.18	1.01	.316
Trait thin ideal internalization	0.40	0.17	2.39	.018
Condition x trait thin ideal internalization	-0.40	0.32	-1.27	.204
<u>State appearance dissatisfaction</u>				
Condition	1.14	2.90	0.39	.695
Trait thin ideal internalization	0.32	0.16	1.95	.052
Condition x trait thin ideal internalization	-0.12	0.29	-0.41	.680
<u>State anxious mood</u>				
Condition	2.03	2.87	0.71	.479
Trait thin ideal internalization	0.43	0.15	2.96	.004
Condition x trait thin ideal internalization	-0.12	0.29	-0.42	.678
<u>State depressed mood</u>				
Condition	0.68	2.51	0.27	.786
Trait thin ideal internalization	0.45	0.13	3.49	.001
Condition x trait thin ideal internalization	-0.13	0.25	-0.52	.606
<u>State happiness</u>				
Condition	12.12	3.01	4.03	.000
Trait thin ideal internalization	-0.37	0.15	-2.43	.016
Condition x trait thin ideal internalization	0.16	0.30	0.53	.600
<u>State confidence</u>				
Condition	9.79	3.44	2.84	.005
Trait thin ideal internalization	-0.50	0.17	-2.90	.004
Condition x trait thin ideal internalization	0.21	0.34	0.62	.539

## Discussion

The primary goal of Study One was to determine whether a brief writing-based self-compassion intervention (versus a neutral sorting task) could mitigate increases in body dissatisfaction and mood that are commonly observed among women after comparing themselves to thin ideal images on Instagram. This study also aimed to determine for whom this intervention works best. More specifically, it examined four potential individual difference moderators and tested whether the self-compassion intervention was more effective for individuals high in trait self-compassion, the tendency to engage in social appearance comparisons, trait physical appearance perfectionism, or trait thin ideal internalization.

Six key findings emerged from the results of this study. The key findings are first summarized in this paragraph and then discussed in detail further below. First, contrary to our hypotheses, the self-compassion intervention was no more effective than the control task at decreasing body dissatisfaction following social media exposure (H1). Second, this study demonstrated that women who were instructed to view and compare themselves to thin-ideal images on Instagram experienced increased depressed mood, as well as decreased happiness and confidence. In partial support of the hypotheses, the self-compassion intervention was no more effective than the control task at improving feelings of anxious or depressed mood after exposure to the thin ideal images, but was more effective than the control task at improving feelings of happiness and confidence (H2). Third, contrary to the hypotheses, women who had high levels of trait self-compassion did not derive more benefit from the self-compassion intervention than did those who were low on trait self-compassion. There was some evidence of a trend towards greater confidence among women with higher trait self-compassion who completed the intervention (H3). Also contrary to the hypotheses, the self-compassion intervention did not have

differing effects for women who have a greater tendency to compare themselves to others (H4), those with higher levels of physical appearance perfectionism (H5), or those with greater internalization of the thin ideal (H6).

The first major finding was that the self-compassion task was no more effective than the control task at decreasing feelings of body dissatisfaction (H1). One consideration for this null finding may be due to the absences of a significant increase in weight and appearance dissatisfaction after viewing the Instagram images. This was unexpected given that previous studies have reliably found increases in body dissatisfaction following Instagram use (Brown & Tiggemann, 2016; McComb & Mills, 2021; McComb et al., 2021; Saiphoo & Zahra, 2019). The finding that both the intervention task and control task were equivalent in their reductions in body dissatisfaction may be attributed to the benefits of distraction from a low-level body image threat. Previous studies have found that distracting an individual after a threat to their body image can lead to short-term reductions in body dissatisfaction. Wade and colleagues (2009) demonstrated that individuals who were asked to focus their attention away from their body and related thoughts and feelings after viewing thin-ideal magazine images had more weight satisfaction than people who engaged in a control task. An alternative explanation may be that the self-compassion task was too simplistic to be differentiated from a distraction task. A full self-compassion intervention that involved the mindfulness and common humanity components, in addition to the explicit instruction to engage in self-kindness, may be necessary to recover from the declines caused by viewing thin-ideal images (Neff, 2003). Future interventions may consider asking individuals to become aware of their present thoughts and feelings before beginning the writing task to increase mindfulness. Moreover, the writing task instructions may ask individuals to write about how their experiences are similar to those of others in addition to

expressing “kindness, compassion, and understanding towards yourself.” This would allow the writing task to evoke common humanity *and* self-kindness. As previously outlined, these three components facilitate each other and combine to increase overall self-compassion (Neff, 2003). All components may be necessary to reducing body dissatisfaction after exposure to a body image threat such as social media exposure.

The next major finding was that the self-compassion intervention did not improve anxious or depressed mood after exposure to the Instagram images, but did improve feelings of happiness and confidence (H2). Based on this study, it appears that this self-compassion writing intervention has differential effects for positive and negative mood states. Because state anxious mood was not adversely affected by the Instagram images, it makes sense that neither the intervention nor the control task led to improvements in this variable. On the other hand, both the self-compassion and control tasks were able to improve feelings of depression that had occurred after exposure to the Instagram images. As discussed above in relation to body image, this may be attributed to the fact that both conditions served as a distraction from negative affect. Previous research has shown that depressed patients who were subjected to a negative mood induction reported improvements in their mood after engaging in a distraction task (Huffziger & Kuehner, 2009; Singer & Dobson, 2007). In this way, distraction has been demonstrated as a beneficial intervention for depressed mood states. On the other hand, changes in positive mood, specifically happiness and confidence, were observed in the self-compassion condition but not the control condition, indicating that the experimental task functioned as more than just a distraction from these affective states. Previous studies have demonstrated a relationship between self-compassion and happiness. Specifically, people high in self-compassion report more happiness than those low on this trait (Neff et al., 2007). The potential for a bi-directional relationship has

been clarified by intervention research, which found that individuals in a self-compassion intervention report greater levels of happiness than those in a control intervention (Shapira & Mongrain, 2010). This intervention was also effective at improving feelings of confidence after being exposed to thin ideal images on Instagram. This may be because greater levels of self-compassion have been found to be positively associated with confidence (Arslan, 2016), and therefore fostering self-compassion may lead to improvements in confidence. To our knowledge, this is the first study to examine confidence as a state outcome of a self-compassion intervention, and the findings suggest that this intervention is effective at increasing confidence after viewing body-threatening images. The differential findings between positive and negative mood states suggest that a self-compassion intervention may only be superior to a control at improving positive affect.

The third major finding was that trait self-compassion did not moderate the efficacy of the intervention as expected (H3). That is, having higher levels of trait self-compassion did not provide additional benefits of the self-compassion intervention in terms of body dissatisfaction or mood (i.e., anxious mood, depressed mood, and happiness). Recent research highlights the variability of self-compassion throughout the day (Kelly & Stephen, 2016), suggesting that self-compassion may be less of a “personality trait” and more influenced by external variables, such as scrolling through Instagram, than previously thought. Perhaps viewing the Instagram images changed state levels of self-compassion which nullified any moderation effects of potential trait self-compassion on the efficacy of the self-compassion intervention. In any case, this is a promising finding for individuals low on trait self-compassion because it suggests that a brief, self-compassion intervention can be as effective for them as it is for people high on this trait. Of note, there was a marginally significant effect which suggested that having high levels of self-

compassion may be associated with greater confidence following social media use for those who engaged in the self-compassion intervention. While this finding should be interpreted with caution, especially because the study was not underpowered statistically, it is in keeping with previous research that demonstrated a relationship between self-compassion and confidence (Arslan, 2016). It may be that individuals higher on this trait found the self-compassion task easier, more accessible, or more believable given their baseline tendencies, which allowed them to experience greater confidence even after a body-image threat. However, further research would be necessary to understand the true mechanisms of action for among these individuals.

The fourth major finding was that there were no differences between the intervention and control task for individuals high in social appearance comparison tendencies (H4). This finding is contrary to the hypothesis that the self-compassion task would be less effective for those high in this trait. Equivalent efficacy suggests that the brief self-compassion writing task used in the study may be effective even for individuals who regularly engage in social appearance comparisons, which is especially problematic for social media use (Fardouly et al., 2017; Hogue & Mills, 2019; Modica, 2019; Scully et al., 2020). Given that trait appearance comparison tendency is associated with low levels of self-compassion (Duarte et al., 2015; Homan & Tylka, 2015), one explanation for the efficacy of the intervention in this group may be through the explicit activity of fostering self-compassion. This may have offset impact of the social comparison tendency to the same degree as the possible distraction provided by the word sorting task.

The fifth major finding was that trait physical appearance perfectionism did not moderate the effectiveness of the intervention (H5). Within this study, having higher levels for worries about one's appearance and a desire for others to admire one's appearance did not decrease the

efficacy of this intervention, as expected. Instead, there were no differences between those high, moderate, and low on this trait who engaged in the self-compassion task, suggesting that this task may be equally beneficial to people with varying levels of this trait. This an important finding given the risk factors associated with high physical appearance perfectionism including less appearance self-esteem, greater body dissatisfaction, and eating disorder symptomology (Stoeber & Yang, 2015; Yang & Stoeber, 2012). Especially in the context of Instagram use which bombards users with images of highly edited and “perfected” images, a self-compassion intervention may be a helpful intervention avenue that warrants further research.

Finally, the sixth major finding was that thin ideal internalization also did not moderate the efficacy of this intervention (H6). Contrary to our hypothesis, women who are high in trait thin ideal internalization did not report feeling any worse following the intervention than did those who do not accept the societal ideals of beauty. Since women who are high on thin ideal internalization feel that thin ideal images are the standard of beauty to strive for, it was anticipated that exposure and comparison to thin ideal images would have a greater impact on their body dissatisfaction. As such, it was hypothesized that being self-compassionate may be more difficult for these individuals and that the intervention would not override resultant feelings of body dissatisfaction. As previously mentioned, women high in thin ideal internalization are more likely to experience body dissatisfaction and even disordered eating than those who do not strive to be thin (Thompson & Stice, 2001). So, finding an intervention that is effective in decreasing body dissatisfaction, especially after viewing a threat to their body image, is very important. Once again, actively engaging in a self-compassion task may have offset some of the negative effects of thin ideal internalization on subsequent body dissatisfaction to the same degree as engaging in the word sorting task.

## Summary

Study One revealed that a three-minute self-compassion writing intervention can help increase state happiness and confidence, over and above completing a neutral control task. There is some evidence that this intervention may be differentially beneficial for women with higher trait self-compassion, such that they may report higher levels of confidence, but further research is necessary to confirm this moderation effect. Overall, trait self-compassion does not appear to impact the efficacy of this intervention. The effects of this intervention also do not differ based on how much participants engage in appearance-based social comparisons, the level of physical appearance perfectionism, and how much they internalized thin ideal images. While there is no evidence that this brief intervention can decrease body dissatisfaction or negative mood, it has the potential to help increase happiness and confidence in as little as three minutes. To address changes in body dissatisfaction and negative affect brought on by social media use, the timing of this intervention may matter. Implementing this intervention *before* social media use may prevent increases in psychological distress and should be explored in future research.

## Study Two<sup>6</sup>

To further understand the efficacy of a self-compassion intervention, Study Two aimed to determine whether the order of delivery would differentially impact the negative effects of social media on body image and mood. More specifically, it investigated whether completing the same brief self-compassion writing intervention before a forced-comparison exposure task to thin-ideal images on Instagram could prevent increases in body dissatisfaction and changes in mood variables. Once again, this task was compared against the same neutral-word sorting task that served as a control condition. This study was novel in the objective to prevent psychological distress before it occurs in response to social media exposure.

## Methods

### Participants

Participants were once again recruited through an undergraduate research pool at a Canadian university and Amazon Mechanical Turk. Inclusion criteria included being female between the ages of 18 to 55 years and residing within Canada or the United States. Altogether, 260 participants completed the experiment, but 8 participants were deemed to be ineligible because they failed to properly complete the self-compassion or sorting tasks and 22 participants did not complete the post-experiment questionnaires. Therefore, the final sample consisted of 230 women, ranging in age from 18-55 years ( $M = 25.88$ ,  $SD = 10.35$ ). Of this final sample, 149 participants were from Amazon Mechanical Turk and 81 participants were from the undergraduate research pool. The self-reported ethnic distribution of the final sample was 41% White, 21% South Asian, 9% Middle Eastern, 8% East Asian, 8% Black, 4% Hispanic/LatinX,

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<sup>6</sup> Study Two has been published with slight changes to the analyses reported in the dissertation document: Gobin, K. C., McComb, S. E., & Mills, J. S. (2022). Testing a self-compassion micro-intervention before appearance-based social media use: Implications for body image. *Body Image, 40*, 200-206.

1% Aboriginal, and 8% “Other”. Participants’ self-reported body mass index ( $BMI = kg/m^2$ ) scores ranged from 15.59 to 48.81 ( $M = 24.29$ ,  $SD = 5.75$ ). The mean BMI score fell within the “normal weight range” (18.5-24.9) according to World Health Organization guidelines (World Health Organization, 2019). The majority of the sample (48%) had completed high school, 21% had some college as their highest level of education, 17% completed a four-year degree, 8% completed a two-year degree, 3% completed a professional degree, 1% completed less than high school, and 1% a doctorate degree.

## **Materials**

**Body dissatisfaction induction.** Study Two used the same 12 thin ideal images of a highly attractive woman that were used for Study One. This maintained consistency between the two studies.

## **Measures**

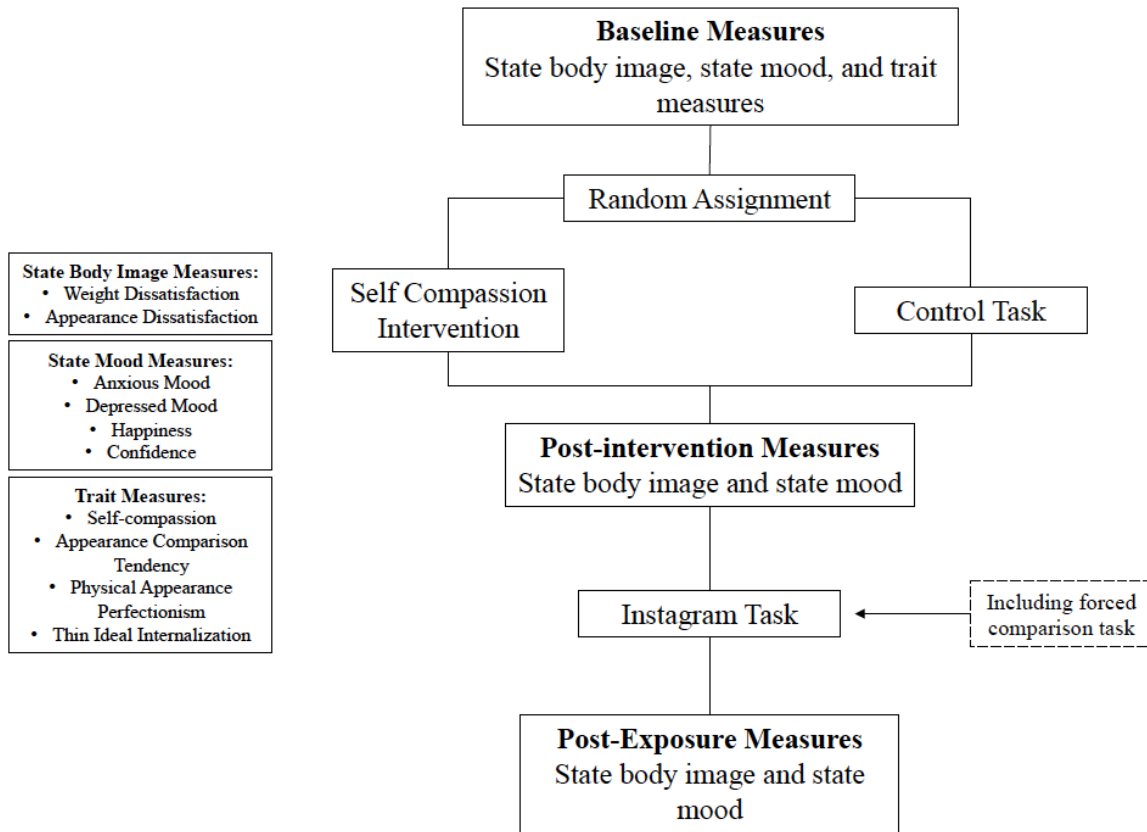
Study Two administered the same measures as Study One including the VAS scales for state body image and mood, as well as the trait measures of self-compassion, social appearance comparison tendency, physical appearance perfectionism, and thin ideal internalization.

## **Procedure**

The procedure for this study is similar to Study One. Ethics approval was granted by the York University Human Participants Review Committee. Once again, eligible participants were able to see and sign up for an online study about the relationship between personality traits (deception was again used to decrease demand characteristics) and Instagram use through the undergraduate research pool or Amazon Mechanical Turk. Upon sign up, participants provided informed consent and completed baselines measures of their state body image and mood, trait self-compassion levels, trait appearance comparison tendencies, physical appearance

perfectionism, and thin ideal internalization. Participants were randomly assigned to either the experimental condition in which they completed the brief self-compassion writing task described above (see Study One) or to the control condition in which they performed the same simple sorting task as in Study One. Immediately after completion of their assigned tasks, all participants completed the same measures of state mood and body image at baseline (post-intervention assessment). Participants were then shown on the computer screen the 12 images of the thin ideal target woman for exactly 30 seconds per image and were asked to compare the size of their body parts to the size of the Instagram target woman's body parts while they viewed the photos. Next, participants completed the same measures of state mood and body image for the third time (post-exposure assessment), as well as some demographic questions. Finally, participants were debriefed and compensated for their participation. See Figure 5 for a visual schematic of the procedure.

**Figure 5.** Visual Schematic of the Study Two Procedure.



## Statistical Analyses

All statistical analyses were conducted using SPSS version 25. A series of 2 (condition: self-compassion or control) x 3 (time: baseline, post-intervention, or post-exposure) mixed ANOVAs were conducted on all state outcome measures (i.e., body image and mood). State body image was the primary outcome variable and was analyzed at an alpha of less than 0.05; to control for Type I error, the secondary outcome variable of mood was analyzed with a Bonferroni correction ( $p < 0.013$ ). Significant condition x time interactions were followed up with paired samples  $t$ -tests with Bonferroni correction ( $p < 0.025$ ) to investigate within-subjects differences. Partial eta squared (partial  $\eta^2$ ) effect size (small = .01, medium = .06, and large = .14) were reported for the overall ANOVA results (Cohen, 1969). Once again, an a priori sample

size analysis using G\*Power 3.1 (Faul et al., 2007) revealed that 18 participants per condition would provide sufficient power (0.8) to detect a similar effect size (.33) to that found by Moffit and colleagues (2018) at an alpha of .05 using a mixed ANOVA. Extra participants were run to adjust for the current study having two conditions (instead of the three conditions in Moffit et al. (2018)), to allow for possible missing data or exclusions, and provide sufficient power for moderation analyses.

Once again, to test whether trait measures of self-compassion, appearance comparison tendencies, physical appearance perfectionism, or thin ideal internalization moderated the relationships between experimental condition and post-exposure state mood and body image, a series of moderated regression analyses, covarying for baseline values, were conducted in the SPSS macro PROCESS version 3.2 (Hayes, 2017). Model 1 was tested, which included one outcome variable, one predictor, and one moderator. The six post-exposure mood and body image scores were used as our outcome variables, experimental condition as the predictor, and each trait variable as the moderator. Significant interactions were followed up with simple slopes analyses. The simple slopes analyses tested whether experimental condition had an effect on post-exposure state mood and body image outcomes at low (1 SD below the mean), moderate (mean), and high (1 SD above the mean) levels of the trait variable. Marginally significant effects (i.e.,  $p < .05$  to  $.075$ ) are reported for thoroughness. Preliminary analyses were conducted prior to running the regression analyses to ensure that no data assumptions had been violated.

## Results

### Baseline Differences between Conditions

A series of one-way ANOVAs showed that the two experimental conditions did not differ on age,  $F(1, 218) = 0.41, p = .522$ , BMI,  $F(1, 217) = .001, p = .979$ , baseline levels of weight dissatisfaction,  $F(1, 229) = 0.04, p = .836$ , appearance dissatisfaction,  $F(1, 229) = 1.28, p = .260$ , anxious mood,  $F(1, 229) = 0.69, p = .406$ , depressed mood,  $F(1, 229) = 0.64, p = .424$ , happiness,  $F(1, 229) = 1.50, p = .222$ , and confidence,  $F(1, 229) = 0.42, p = .515$ . The two conditions also did not differ on trait levels of self-compassion,  $F(1, 229) = 0.40, p = .528$ , thin ideal internalization,  $F(1, 229) = 0.23, p = .630$ , or physical appearance perfectionism,  $F(1, 229) = 0.31, p = .576$ . Therefore, random assignment to experimental condition successfully resulted in equivalent groups on these variables. See Table 7 for a summary of means, standard deviations, and interaction effects. See Table 8 for correlations among all variables.

Table 7.  
*Means and Standard Deviations for Full Sample and by Condition for Study Two*

Measures	Full Sample		Intervention		Control		Interaction Effects			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>	<i>Partial n<sup>2</sup></i>
Body Image										
Weight Dissatisfaction							3.59	1.78	.034*	.016
Baseline	45.51	35.07	45.55	36.38	45.46	33.72				
Post-Exposure	38.28	32.56	36.05	31.89	40.77	33.26				
Post-Intervention	43.15	34.62	39.30	34.34	47.46	34.60				
Appearance Dissatisfaction							3.16	1.93	.045*	.014
Baseline	42.48	33.33	40.78	33.94	44.40	32.69				
Post-Exposure	38.19	31.85	35.02	30.27	41.75	33.32				
Post-Intervention	42.02	33.25	36.53	31.81	48.19	33.89				
Mood										
Anxiety							2.54	1.78	.087	.011
Baseline	37.59	31.93	36.21	31.10	39.15	32.92				
Post-Exposure	32.82	30.63	31.08	30.27	34.78	31.06				
Post-Intervention	32.14	30.34	28.90	28.14	37.93	32.11				
Depressed Mood							0.26	1.86	.752	.001
Baseline	27.05	31.21	25.88	30.11	28.35	32.49				
Post-Exposure	22.71	26.98	20.73	24.47	24.92	29.49				
Post-Intervention	28.53	30.68	27.48	29.72	29.70	31.81				
Happiness							1.83	1.85	.165	.008
Baseline	47.83	27.89	49.94	26.91	45.41	29.91				
Post-Exposure	46.64	27.38	50.54	27.29	42.14	26.91				
Post-Intervention	41.00	28.81	42.75	28.43	38.98	29.25				
Confidence							0.36	1.88	.685	.002
Baseline	40.15	28.20	41.47	27.94	38.64	28.55				
Post-Exposure	43.50	27.95	45.50	26.59	41.21	29.38				
Post-Intervention	36.21	28.70	38.72	28.90	33.34	28.34				
Moderation Variables										
Trait Self-Compassion	34.16	8.08	34.47	8.37	33.79	7.78				

Social Appearance Comparison	24.44	13.16	23.61	13.57	25.39	12.66
Physical Appearance Perfectionism	41.47	8.32	41.19	8.13	41.80	8.55
Thin Ideal Internalization	27.49	10.09	27.19	10.35	27.83	9.81

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*Note.* \* = Interaction is significant at  $p < .05$



Baseline Anxiety	.254 **	.242 **	.242 **	.359 **	.352 **	.315 **	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Post-Exposure Anxiety	.249 **	.346 **	.322 **	.349 **	.436 **	.366 **	.777 **	--	--	--	--	--	--	--	--	--	--	--	--	--
Post-Intervention Anxiety	.301 **	.417 **	.458 **	.396 **	.466 **	.525 **	.660 **	.793 **	--	--	--	--	--	--	--	--	--	--	--	--
Baseline Depressed Mood	.343 **	.278 **	.260 **	.457 **	.348 **	.346 **	.619 **	.507 **	.523 **	--	--	--	--	--	--	--	--	--	--	--
Post-Exposure Depressed Mood	.370 **	.418 **	.316 **	.467 **	.477 **	.383 **	.532 **	.645 **	.591 **	.780 **	--	--	--	--	--	--	--	--	--	--
Post-Intervention Depressed Mood	.457 **	.492 **	.550 **	.567 **	.489 **	.633 **	.460 **	.511 **	.668 **	.681 **	.732 **	--	--	--	--	--	--	--	--	--
Baseline Happiness	.049	.084	.070	-.039	.101	.028	-.214 **	-.116	-.095	-.301 **	-.195 **	-.198 **	--	--	--	--	--	--	--	--
Post-Exposure Happiness	-.018	-.008	-.041	-.122	-.038	-.109	-.155 *	-.166 *	-.186 **	-.248 **	-.256 **	-.302 **	.785 **	--	--	--	--	--	--	--
Post-Intervention Happiness	-.117	-.069	-.095	-.183 **	-.086	-.193 **	-.164 *	-.132 *	-.162 *	-.198 **	-.187 **	-.312 **	.702 **	.790 **	--	--	--	--	--	--
Baseline Confidence	.111	.124	.096	-.016	.020	.000	-.105	-.035	-.057	-.137 *	-.045	-.062	.592 **	.483 **	.525 **	--	--	--	--	--

Post-Exposure Confidence	.055	-.033	-.005	-.086	-.101	-.116	-.072	-.144*	-.145*	-.094	-.130	-.126	.511**	.592**	.578**	.664**	--	--	--	--	--	--
Post-Intervention Confidence	-.056	-.139*	-.139*	-.186**	-.185**	-.282**	-.090	-.099	-.164*	-.157*	-.101	-.283**	.481**	.551**	.706**	.623**	.755**	--	--	--	--	--
Trait Self-Compassion	-.319**	-.262**	-.217**	-.478**	-.339**	-.322**	-.344**	-.326**	-.307**	-.407**	-.408**	-.459**	.372**	.370**	.452**	.359**	.441**	.448**	--	--	--	--
Social Appearance Comparison	.486**	.554**	.533**	.422**	.478**	.484**	.150*	.253**	.316**	.149*	.279**	.351**	-.068	-.134*	-.208**	-.093	-.153*	-.186**	-.299**	--	--	--
Physical Appearance Perfectionism	.411**	.517**	.464**	.575**	.616**	.582**	.309**	.332**	.355**	.345**	.385**	.452**	-.107	-.184**	-.240**	-.245**	-.231**	-.331**	-.444**	.619**	--	--
Thin Ideal Internalization	.284**	.342**	.331**	.361**	.396**	.378**	.154*	.216**	.258**	.208**	.277**	.307**	-.026	-.089	-.085	-.038	-.071	-.133*	-.253**	.599**	.608**	--

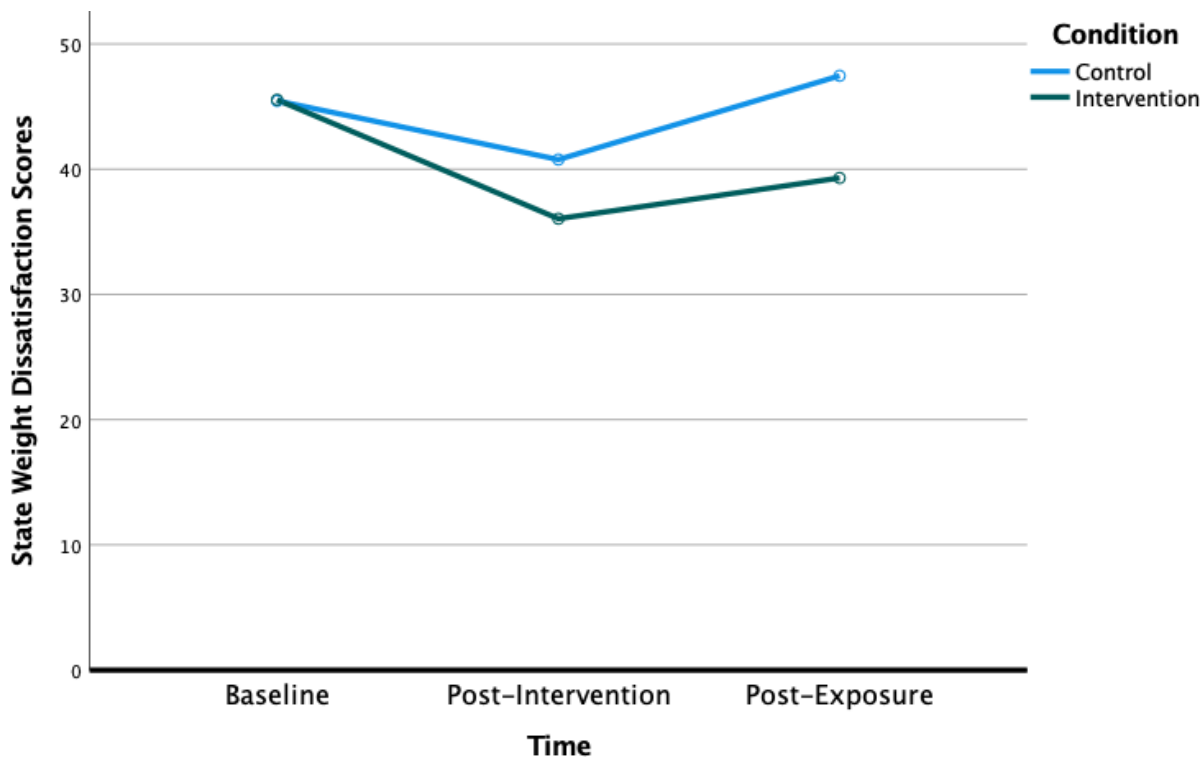
Note. \* = Correlation is significant at  $p < .05$  and \*\* = Correlation is significant at  $p < .01$

## H1: Effect of Condition on Body Image Over Time

**Weight dissatisfaction.** Results indicated that there was a main effect of time on state weight dissatisfaction,  $F(1.78, 396.50) = 11.10, p < .001$ , partial  $\eta^2 = .047^7$ . This result was qualified by a significant interaction between condition and time on state weight dissatisfaction,  $F(1.78, 396.50) = 3.59, p = .034$ , partial  $\eta^2 = .016$ . Paired sample  $t$ -tests revealed that, for individuals in the control condition, state weight dissatisfaction did not change from baseline to post-intervention,  $t(105) = 1.93, p = .057$ , but significantly increased from post-intervention to post-exposure to the Instagram images,  $t(105) = -3.43, p = .001$ . Post-exposure scores were not significantly different from baseline weight dissatisfaction,  $t(106) = -0.69, p = .493$ . For individuals in the self-compassion condition, state weight dissatisfaction decreased from baseline to post-intervention,  $t(118) = 4.60, p < .001$ , but did not differ from post-intervention to post-exposure,  $t(118) = -1.98, p = .050$ . Post-exposure remained significantly lower than baseline,  $t(122) = 2.73, p = .007$  (see Figure 6). There was no main effect of condition on state weight dissatisfaction,  $F(1, 223) = 1.04, p = .309$ , partial  $\eta^2 = .005$ .

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<sup>7</sup>Mauchly's test indicated that the assumption of sphericity had been violated in the weight dissatisfaction analyses,  $\chi^2(2) = 29.61, p < .001$ , and so the degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .89$ ).

**Figure 6.** Changes in State Weight Dissatisfaction

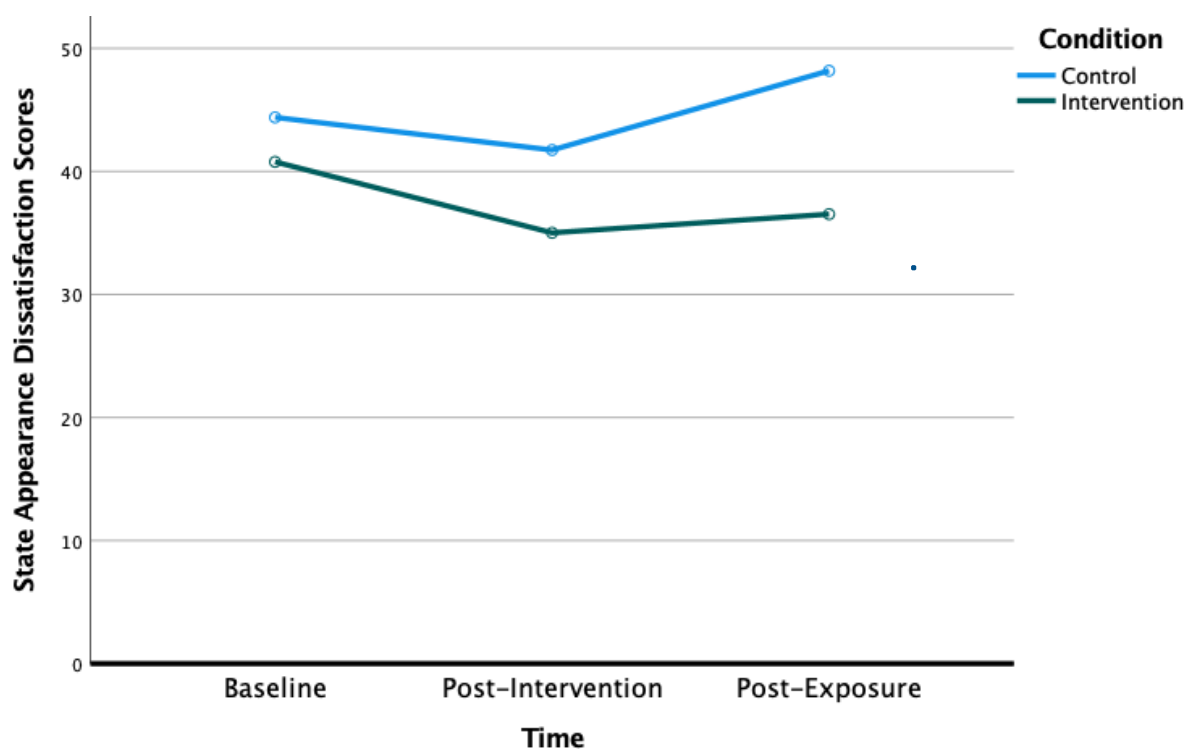
*Note.* State weight dissatisfaction was scored on a scale from 0-100

**Appearance dissatisfaction.** Results indicated that there was a main effect of time on state appearance dissatisfaction,  $F(1.93, 430.34) = 4.30, p = .015$ , partial  $\eta^2 = .019^8$ . This result was qualified by a significant interaction between condition and time on state appearance dissatisfaction,  $F(1.93, 430.34) = 3.16, p = .045$ , partial  $\eta^2 = .014$ . Paired sample  $t$ -tests revealed that, for individuals in the control condition, state appearance dissatisfaction did not differ from baseline to post-intervention,  $t(105) = 1.04, p = .299$ , and significantly increased from post-intervention to post-exposure  $t(105) = -2.80, p = .006$ . Post-exposure scores did not significantly

<sup>8</sup>Mauchly's test indicated that the assumption of sphericity had been violated in the appearance dissatisfaction analyses,  $\chi^2(2) = 8.23, p = .016$ , and so the degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ( $\epsilon = .97$ ).

differ from baseline appearance dissatisfaction,  $t(106) = -1.48, p = .143$ . In the self-compassion condition, state appearance dissatisfaction significantly decreased from baseline to post-intervention,  $t(118) = 2.81, p = .006$ , and did not differ from post-intervention to post-exposure,  $t(118) = -0.80, p = .423$ . There was no significant difference between post-exposure scores and baseline,  $t(122) = 1.75, p = .083$  see Figure 7), such that appearance dissatisfaction was lower post-exposure than at baseline. There was no main effect of condition on state appearance dissatisfaction,  $F(1, 223) = 3.46, p = .064$ , partial  $\eta^2 = .015$ .

**Figure 7.** Changes in State Appearance Dissatisfaction



*Note.* State appearance dissatisfaction was scored on a scale from 0-100

## H2: Effect of Condition on Mood Over Time

**Anxious mood.** Results revealed that there was a significant main effect of time,  $F(1.78, 403.27) = 6.28, p = .003, \text{partial } \eta^2 = .027^9$ , indicating that across the two conditions, state anxious mood significantly differed across time. Pairwise comparisons showed that state anxious mood significantly decreased from baseline to post-intervention ( $p = .002$ ) but did not change post-exposure ( $p = .974$ ). State anxious mood was significantly lower at baseline compared to post-exposure ( $p = .039$ ). There was no main effect of condition,  $F(1, 226) = 1.96, p = .163, \text{partial } \eta^2 = .009$ , and no significant interaction between condition and time,  $F(1.78, 403.27) = 2.54, p = .087, \text{partial } \eta^2 = .011$ .

**Depressed mood.** Results indicated that there was a significant main effect of time,  $F(1.86, 415.42) = 8.25, p < .001, \text{partial } \eta^2 = .036^{10}$ , on depressed mood. Pairwise comparisons showed that state depressed mood decreased from baseline to post-intervention ( $p = .004$ ) and then significantly increased following the exposure ( $p < .001$ ). There were no significant difference between scores at baseline and post-exposure ( $p = .756$ ). There was no main effect of condition,  $F(1, 224) = 0.69, p = .409, \text{partial } \eta^2 = .003$ . There was also no significant interaction between condition and time,  $F(1.86, 415.42) = 0.26, p = .752, \text{partial } \eta^2 = .001$ .

**Happiness.** Results indicated that there was a significant main effect of time,  $F(1.85, 417.67) = 15.45, p < .001, \text{partial } \eta^2 = .064^{11}$ , on happiness. Pairwise comparisons showed that state happiness did not change from baseline to post-intervention ( $p = .606$ ), however it

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<sup>9</sup> Mauchly's test indicated that the assumption of sphericity had been violated in the state anxious mood analyses,  $\chi^2(2) = 28.98, p < .001$ , and so the degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ( $\epsilon = .89$ ).

<sup>10</sup> Mauchly's test indicated that the assumption of sphericity had been violated in the depressed mood analyses,  $\chi^2(2) = 18.22, p < .001$ , and so the degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ( $\epsilon = .93$ ).

<sup>11</sup> Mauchly's test indicated that the assumption of sphericity had been violated in the happiness analyses,  $\chi^2(2) = 19.30, p < .001$ , and so the degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ( $\epsilon = .93$ ).

significantly decreased following the exposure task ( $p < .001$ ). There was a significant difference between scores at baseline and post-exposure ( $p < .001$ ). There was no main effect of condition,  $F(1, 226) = 2.70, p = .102, \text{partial } \eta^2 = .012$ . There was also no significant interaction between condition and time,  $F(1.86, 415.42) = 1.83, p = .165, \text{partial } \eta^2 = .008$ .

**Confidence.** Results indicated that there was a significant main effect of time,  $F(1.88, 423.81) = 11.85, p < .001, \text{partial } \eta^2 = .050^{12}$ , on confidence. Pairwise comparisons showed that state confidence did not change from baseline to post-intervention ( $p = .094$ ), however it significantly decreased following the exposure task ( $p < .001$ ). There was a significant difference between scores at baseline and post-exposure ( $p < .001$ ). There was no main effect of condition,  $F(1, 225) = 1.56, p = .212, \text{partial } \eta^2 = .007$ . There was also no significant interaction between condition and time,  $F(1.88, 423.81) = 0.36, p = .685, \text{partial } \eta^2 = .002$ .

### H3: Role of Trait Self-Compassion as a Moderator

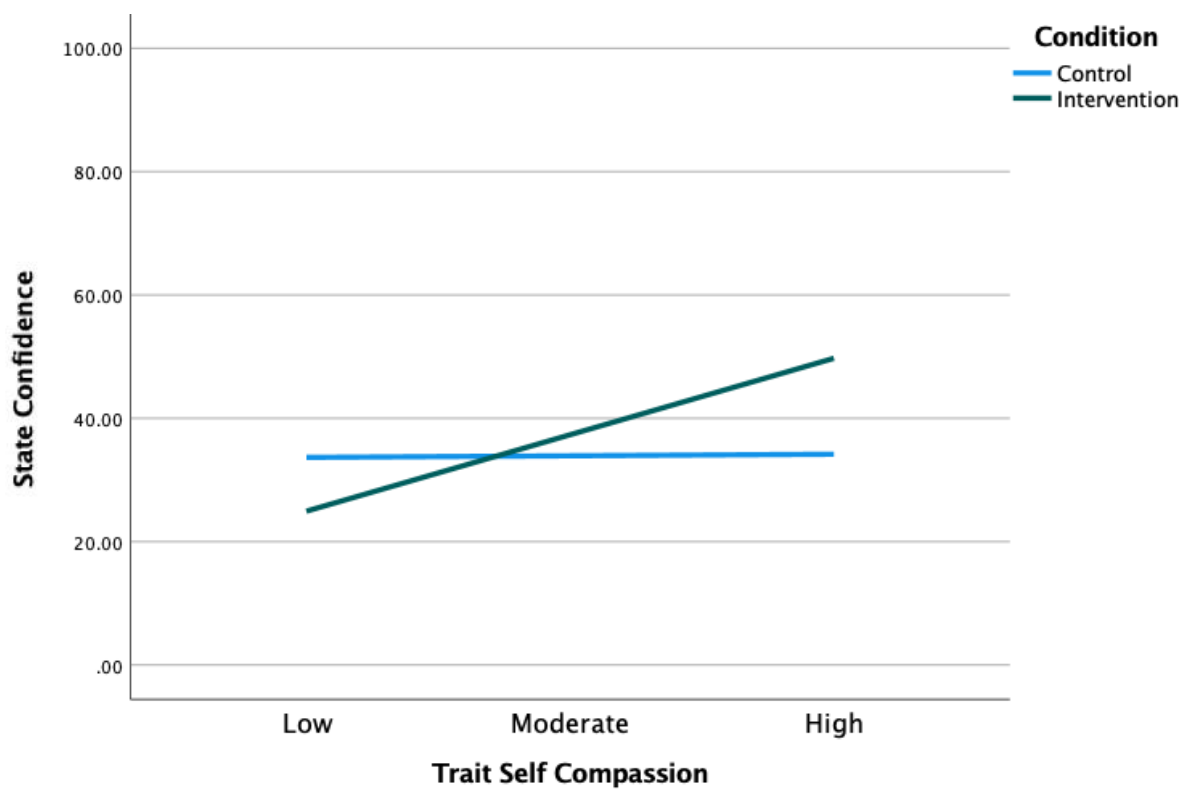
Moderated regression analyses were conducted to examine whether levels of trait self-compassion moderated the relationship between experimental condition and post-exposure body image and mood scores. Across the two conditions, trait self-compassion was not a significant predictor of the post-intervention body image variables. However, it significantly predicted post-intervention mood outcomes, such that higher levels of trait self-compassion were associated with lower levels of depressed mood and higher levels of happiness and confidence (see Table 9). A significant interaction between condition and trait self-compassion was found for post-exposure confidence. More specifically, if participants had moderate levels of trait self-compassion, the two conditions did not significantly differ on post-exposure confidence scores.

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<sup>12</sup>Mauchly's test indicated that the assumption of sphericity had been violated in the confidence analyses,  $\chi^2(2) = 14.29, p = .001$ , and so the degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .94$ ).

However, among participants in the self-compassion intervention condition, those who were high on trait self-compassion reported higher post-exposure state confidence and those who were low on trait self-compassion reported lower post-exposure state confidence than did those in the control condition (see Figure 8).

**Figure 8.** Low, moderate, and high levels of trait self-compassion for post-exposure state confidence scores



*Note.* State confidence was scored on a scale from 0-100

Table 9.

*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of trait self-compassion for post-exposure body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	-8.15	3.17	-2.57	.011
Trait self-compassion	0.08	0.21	0.37	.708
Condition x trait self-compassion	-0.08	0.40	-0.20	.845
<u>State appearance dissatisfaction</u>				
Condition	-9.35	3.14	-2.98	.003
Trait self-compassion	0.07	0.22	0.30	.765
Condition x trait self-compassion	-0.15	0.39	-0.39	.694
<u>State anxious mood</u>				
Condition	-7.17	2.99	-2.40	.017
Trait self-compassion	-0.33	0.20	-1.69	.093
Condition x trait self-compassion	0.17	0.37	0.47	.641
<u>State depressed mood</u>				
Condition	-0.62	2.88	-0.21	.830
Trait self-compassion	-0.81	0.19	-4.16	.000
Condition x trait self-compassion	-0.35	0.36	-0.97	.334
<u>State happiness</u>				
Condition	0.38	2.63	0.14	.887
Trait self-compassion	0.78	0.18	4.42	.000
Condition x trait self-compassion	0.42	0.33	1.27	.204
<u>State confidence</u>				
Condition	3.42	2.72	1.25	.211
Trait self-compassion	0.84	0.18	4.61	.000
Condition x trait self-compassion	1.50	0.34	4.41	.000
Low trait self-compassion	-8.72	3.86	-2.26	.025
Moderate trait self-compassion	3.42	2.72	1.25	.211
High trait self-compassion	15.56	3.89	4.00	.000

#### **H4: Role of Trait Appearance Comparison as a Moderator**

Moderated regression analyses were conducted to examine whether levels of trait appearance comparison moderated the relationship between experimental condition and post-exposure body image and mood scores. Across the two conditions, trait appearance comparison

predicted all body image and mood variables, such that higher levels of trait social comparison were associated with greater weight dissatisfaction, appearance dissatisfaction, anxious mood, and depressed mood, as well as lower levels of happiness and confidence (see Table 10). There were no significant condition by trait appearance comparison interactions for any body image or mood outcome, indicating that post-exposure body image and mood was not dependent upon participants' levels of trait appearance comparison tendencies in either condition.

Table 10.

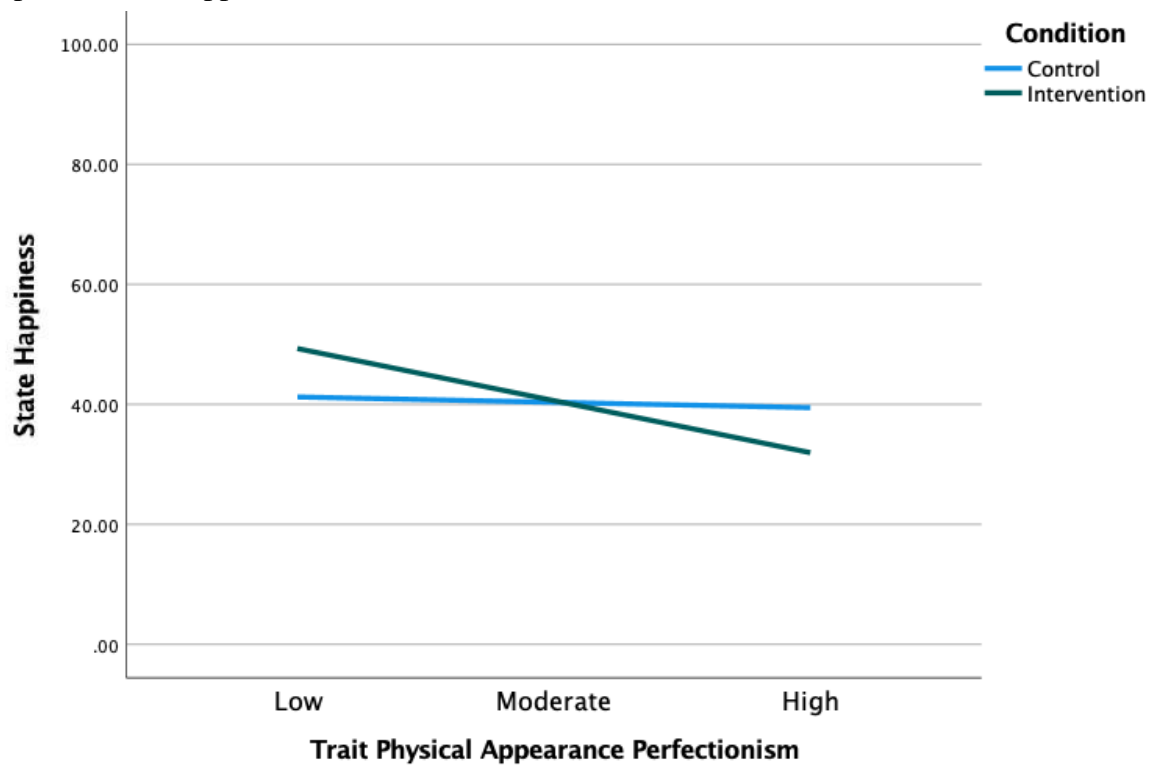
*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of trait appearance comparison for post-exposure body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	-7.04	3.02	-1.33	.021
Trait appearance comparison	0.63	0.13	4.77	.000
Condition x trait appearance comparison	-0.40	0.23	-1.75	.082
<u>State appearance dissatisfaction</u>				
Condition	-8.72	2.99	-2.92	.004
Trait appearance comparison	0.58	0.13	4.67	.000
Condition x trait appearance comparison	-0.37	0.23	-1.63	.105
<u>State anxious mood</u>				
Condition	-6.51	2.88	-2.26	.025
Trait appearance comparison	0.50	0.11	4.52	.000
Condition x trait appearance comparison	-0.10	0.22	-0.46	.649
<u>State depressed mood</u>				
Condition	0.10	2.81	0.04	.971
Trait appearance comparison	0.60	0.11	5.56	.000
Condition x trait appearance comparison	-0.18	0.22	-0.82	.416
<u>State happiness</u>				
Condition	-0.03	2.68	-0.01	.992
Trait appearance comparison	-0.34	0.10	-3.37	.001
Condition x trait appearance comparison	-0.28	0.21	-1.37	.171
<u>State confidence</u>				
Condition	3.27	2.95	1.11	.269
Trait appearance comparison	-0.27	0.11	-2.41	.017
Condition x trait appearance comparison	-0.05	0.23	-0.22	.827

**H5: Role of Physical Appearance Perfectionism as a Moderator**

Moderated regression analyses were conducted to examine whether levels of trait physical appearance perfectionism moderated the relationship between experimental condition and post-exposure body image and mood scores. Across the two conditions, higher levels of trait physical appearance perfectionism were associated in higher levels of weight dissatisfaction, appearance dissatisfaction, anxious mood, and depressed mood, as well as lower levels of happiness and confidence (see Table 11). A significant interaction between condition and physical appearance perfectionism was found for post-exposure happiness. Specifically, among participants who had moderate levels of physical appearance perfectionism, the two conditions did not significantly differ on post-exposure happiness scores. However, individuals in the self-compassion intervention condition who were low on trait physical appearance perfectionism reported higher post-exposure state happiness than did those in the control condition. Moreover, those high on trait physical appearance perfectionism reported lower post-exposure state happiness than did those in the control condition (see Figure 9).

**Figure 9.** Low, moderate, and high levels of trait physical appearance perfectionism for post-exposure state happiness scores



*Note.* State happiness was scored on a scale from 0-100.

Table 11.

*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of physical appearance perfectionism comparison for post-exposure body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	-7.66	3.06	-2.51	.013
Physical appearance perfectionism	0.82	0.20	4.05	.000
Condition x physical appearance perfectionism	-0.31	0.37	-0.84	.399
<u>State appearance dissatisfaction</u>				
Condition	-9.43	2.97	-3.17	.002
Physical appearance perfectionism	1.09	0.22	4.99	.000
Condition x physical appearance perfectionism	-0.32	0.36	-0.90	.367
<u>State anxious mood</u>				
Condition	-7.10	2.93	-2.42	.016
Physical appearance perfectionism	0.59	0.19	3.19	.002
Condition x physical appearance perfectionism	-0.57	0.35	-0.92	.356
<u>State depressed mood</u>				
Condition	-0.58	2.84	-0.20	.839
Physical appearance perfectionism	0.91	0.18	4.99	.000
Condition x physical appearance perfectionism	0.19	0.34	0.54	.587
<u>State happiness</u>				
Condition	0.28	2.63	0.11	.914
Physical appearance perfectionism	-0.61	0.16	-3.83	.000
Condition x physical appearance perfectionism	-0.94	0.32	-2.96	.003
Low physical appearance perfectionism	8.07	3.73	2.16	.032
Moderate physical appearance perfectionism	0.28	2.63	0.11	.914
High physical appearance perfectionism	-7.50	3.71	-2.03	.044
<u>State confidence</u>				
Condition	3.45	2.89	1.19	.233
Physical appearance perfectionism	-0.66	0.18	-3.69	.000
Condition x physical appearance perfectionism	-0.50	0.35	-1.43	.153

**H7: Role of Thin Ideal Internalization as a Moderator**

Moderated regression analyses were conducted to examine whether levels of trait thin ideal internalization moderated the relationship between experimental condition and post-exposure body image and mood scores. Across the two conditions, higher levels of thin ideal internalization were associated with higher levels of weight dissatisfaction, appearance dissatisfaction, anxious mood, and depressed mood, and lower levels of confidence (see Table 12). There were no significant condition by thin ideal internalization interactions for any body image or mood outcome, indicating that post-exposure body image and mood were not dependent upon participants' levels of thin ideal internalization in either condition.

Table 12.

*Moderated regression results and significant simple slopes analysis at low, medium, and high levels of trait thin ideal internalization for post-exposure body image and mood variables.*

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>State weight dissatisfaction</u>				
Condition	-7.81	3.11	-2.52	.013
Trait thin ideal internalization	0.47	0.16	2.95	.004
Condition x trait thin ideal internalization	-0.38	0.31	-1.21	.227
<u>State appearance dissatisfaction</u>				
Condition	-9.26	3.07	-3.02	.003
Trait thin ideal internalization	0.49	0.16	3.01	.003
Condition x trait thin ideal internalization	-0.42	0.31	-1.38	.170
<u>State anxious mood</u>				
Condition	-7.08	2.94	-2.41	.017
Trait thin ideal internalization	0.48	0.15	3.23	.001
Condition x trait thin ideal internalization	-0.06	0.29	-0.21	.833
<u>State depressed mood</u>				
Condition	-0.64	2.91	-0.22	.827
Trait thin ideal internalization	0.52	0.15	3.49	.001
Condition x trait thin ideal internalization	0.13	0.29	0.45	.651
<u>State happiness</u>				
Condition	0.45	2.73	0.16	.870
Trait thin ideal internalization	-0.18	0.14	-1.33	.184
Condition x trait thin ideal internalization	-0.47	0.27	-1.73	.084
<u>State confidence</u>				
Condition	3.56	2.95	1.21	.229
Trait thin ideal internalization	-0.30	0.15	-2.05	.042
Condition x trait thin ideal internalization	-0.28	0.29	-0.94	.347

## Discussion

Study Two aimed to investigate the effectiveness of the same brief, self-compassion writing task as Study One, but this time as a potential tool to *prevent* the body image and mood distress that commonly results from social media use. More specifically, it examined whether completing a 3-minute writing task before a forced-comparison to thin-idealized images of an Instagram model could lessen a subsequent worsening of weight and appearance dissatisfaction, as well as improve mood. The role of various personality variables, such as trait self-compassion, social appearance comparisons, physical appearance perfectionism, and thin ideal internalization, were once again examined as potential moderators for the effectiveness of this intervention.

Six key findings emerged from the results of this study. The key findings are first summarized in this paragraph and then discussed in detail further below. First, in support of our hypotheses, the self-compassion task resulted in reduced weight and appearance dissatisfaction that was maintained following social media exposure (H1). Second, this study demonstrated that, regardless of condition, women who were instructed to view and compare themselves to thin-ideal images on Instagram experienced increased depressed mood, as well as decreased happiness and confidence. The self-compassion intervention was no more effective than the control condition at preventing feelings of anxious mood, depressed mood, happiness, or confidence (H2). Third, as hypothesized, women who had high levels of trait self-compassion derived more benefit from the self-compassion intervention, specifically in regard to feelings of confidence following exposure to Instagram images. Unexpectedly, individuals who were low on trait self-compassion reported lower levels of confidence after the body image threat (H3). Contrary to the hypotheses, the self-compassion intervention did not have differing effects for women who have a greater tendency to compare themselves to others, leaving hypothesis four

unsupported (H4). In support of the hypothesis of differing effects for those with lower levels of physical appearance perfectionism, compare to those high in this trait, these individuals reported higher levels of happiness after exposure to thin ideal images. Alternatively, women who are high on this trait reported lower levels of happiness after viewing the Instagram images (H5). Finally, contrary to the hypothesis, the degree to which one internalized the thin ideal did not impact the efficacy of this intervention (H6).

The findings from this study supported the first hypothesis whereby those who participated in the self-compassion writing task reported significantly less weight and appearance dissatisfaction than those who participated in a neutral-word sorting task after comparing oneself to thin ideal images on Instagram (H1). In other words, this brief intervention was effective in preventing the increases in body dissatisfaction commonly found after Instagram use (Brown & Tiggemann, 2016; McComb & Mills, 2021; McComb et al., 2021; Saiphoo & Zahra, 2019), such that decreases in body dissatisfaction were maintained even after viewing thin ideal images. This is in line with previous research which demonstrated the effectiveness of brief self-compassion writing tasks on improving body image (Stern & Engeln, 2018). More specifically, this finding corroborates research that suggests that a brief self-compassion writing task can help recovery from negative body image inductions via imaginary exposures (Seekis et al., 2017) and magazine advertisements that depict the thin ideal (Moffitt et al., 2018). The current study extends these findings to suggest that using this brief 3-minute writing task *before* social media use can dampen heightened body dissatisfaction before it occurs, when compared to a neutral control task.

The second hypothesis that this intervention would prevent changes in anxious mood, depressed mood, happiness, and confidence over and above the control condition task was not

supported (H2). There were no between-group differences on any outcome measure of mood. Across the two conditions, there were significant decreases in anxious and depressed mood following both tasks (intervention and control), but no changes in happiness and confidence. After making comparisons to the idealized body images on Instagram, women in both conditions reported increases in depressed mood, and decreases in happiness and confidence. The negative effects of social media use on mood are well-documented in the literature (Brown & Tiggemann, 2016), especially when appearance-based comparisons are made (Fardouly et al. 2015). The absence of significant changes in mood following the self-compassion intervention may be due to the specific focus on body image (i.e., "...expressing kindness, compassion, and understanding towards yourself regarding your weight, appearance, and body shape"). In other words, the self-compassion intervention targeted body image and not general feelings of positivity. Previous studies that demonstrated changes in mood paired prompts to treat one's body with kindness and imagine a connection with others experiencing body image difficulties with more general prompts to offer kind advice to the self, awareness and reactions to the current circumstances, and write a self-compassionate letter to oneself (Sherman et al, 2019). Of note, Stern and Engeln (2018) found significant increases in positive affect when examining both a general self-compassion condition and body-compassion condition. However, the prompts in these studies (Sherman et al, 2019; Stern & Engeln, 2018) were longer and more detailed than the prompts in the current study, suggesting that more details or a longer reflection time may be necessary to prevent increases in negative mood following social media use. Alternatively, the reductions found after both the intervention and control tasks might reflect a temporary distraction from negative affect. Previous research has demonstrated that a self-compassion writing task and distraction task were equivalent in reducing negative affect following a negative

mood induction (Odou & Brinker, 2015). However, when presented prior to forced comparison to thin ideal images on Instagram, the adverse effects of social media on mood may have been too large to buffer against with the intervention and control tasks. Further research would be necessary to examine alternative prompts that can protect mood in addition to body image.

The findings from this study also revealed that various personality traits may impact the effectiveness of this intervention for positive affect. As hypothesized, individuals with higher levels of trait self-compassion reported more confidence after viewing the Instagram images than individuals who are low on this trait (H3). Previous studies have demonstrated that engaging in a self-compassion task (i.e., reading self-compassion statements) is effective at decreasing state negative mood (Slater et al., 2017), regardless of trait self-compassion. For individuals high in this trait, there may have been a compounded benefit of engaging in a self-compassion task on mood states. This is in line with research that showed that individuals with higher trait self-compassion were better able to recover from a negative mood induction task than those low on this trait (Karl et al., 2018). Accordingly, those who completed the intervention, who also reported higher trait self-compassion, may have been better able to recover from the decrease in positive mood brought about by scrolling through appearance-based images on Instagram (Kohler et al., 2021). It may be that individuals high on this trait are more amenable to the instructions and feel more cognitively congruent with the demands of the writing task. In turn, this may make the task more effective at preventing decreases in confidence. However, for those low in trait self-compassion, it appears that this task was harmful to state confidence after social media use. While low self-compassion is generally related to higher levels of negative affect (Hood, Thomson Ross, & Wills, 2019; Krieger et al., 2016), the reason that the self-compassion intervention was especially harmful for this group remains unknown. One possibility may be that

these individuals were unable to draw upon self-kindness in the brief intervention task. By asking participants to praise their bodies, people low in self-compassion may have struggled to find the words to write which, in turn, lead to feels of inadequacy and lower levels of confidence. A more intensive intervention that normalizes the challenges of being self-compassionate may be more appropriate for this group of people. The absence of a moderation effect among other outcome variables may suggest that confidence is more influenced by trait levels of self-compassion, but more research is necessary to understand this relationship. Alternatively, the negative effects of social media on body image and mood states such as happiness, anxiety, and depression may be far greater than this self-compassion intervention can prevent, regardless of trait self-compassion levels.

Contrary to the hypothesis, there was no evidence that greater levels of trait social appearance comparisons led to varying effects of the intervention (H4). Compared to people low on this trait, this intervention was no less effective for people higher on this tendency. Given the well-established relationship between increased social comparisons and body dissatisfaction (Fardouly et al., 2017; Hogue & Mills, 2019; Modica, 2019; Scully et al., 2020), as well as the role of this trait as a moderator between social media use and body distress (Brown & Tiggemann, 2016), it is promising that this intervention was equally effective for those high and low on this trait. However, it is possible that any moderating effects of this trait were nullified by the instructions to engage in a forced-comparison task. This may have eliminated naturally occurring differences in a tendency to compare oneself to the Instagram images, thus preventing the ability to detect a moderation effect. Future research would be necessary to explore the effects of a forced-comparison task on trait social appearance comparison tendencies. Still, based on the current findings, it appears that a self-compassion intervention may be a viable tool to

mitigate distress following social media use for individuals with high levels of trait social appearance comparisons.

The findings from Study Two provided partial support for the hypothesis that the self-compassion intervention would be less effective for those with high levels of physical appearance perfectionism (H5). Among participants with moderate levels of physical appearance perfectionism, the two conditions did not significantly differ on happiness after viewing and comparing themselves to the Instagram images. However, among those who completed the self-compassion task prior to social media exposure, individuals with lower physical appearance perfectionism reported higher levels of happiness and those high on this trait reported lower levels of happiness than those in the control condition. It has been well-established in the literature that high levels of perfectionism are associated with lower positive affect (Castro et al., 2017; Saboonchi & Lundh, 2003). However, the relationship between physical appearance perfectionism and mood has yet to be examined. The current findings suggest that individuals who have less concerns or hopes for perfection in their physical appearance would benefit more from this intervention in terms of happiness. However, for women who have high levels of physical appearance perfectionism, the self-compassion intervention may not be powerful enough to improve affect, and may even have a harmful effect on happiness, in the context of social media idealized body imagery and comparison.

Lastly, contrary to the hypothesis, the findings from this study demonstrated that internalization of the thin ideal does not impact the efficacy of this intervention (H6). This is a promising finding given that greater thin ideal internalization has been associated with less self-compassion (Tylka, Russell, & Neal, 2015). Despite this existing relationship, it appears that a 3-minute self-compassion intervention can combat entrenched beliefs about the thin ideal and lead

to positive effects, even after making forced comparisons to a thin model on a social media platform. As such, this brief self-compassion task may be a viable intervention option for those with high thin-ideal internalization.

### **Summary**

Study Two found that completing a three-minute self-compassion writing intervention prior to making forced comparisons to thin ideal images on social media can help prevent increases in weight and appearance dissatisfaction. There is some evidence that this intervention is differentially beneficial for various populations; specifically, women who are high on trait self-compassion and low on physical appearance perfectionism may experience greater benefits to their mood. Alternatively, those low on trait self-compassion and high on physical appearance perfectionism may experience less positive affect following this intervention. Applications of this intervention should consider appropriate populations for treatment.

## General Discussion

This program of study investigated whether a brief self-compassion writing intervention could mitigate the psychological distress brought about by social media use for women. Specifically, two randomized controlled experiments investigated whether an established self-compassion micro-intervention – writing a 3-minute self-compassion statement after (Study One) or before (Study Two) comparing oneself to thin-ideal images on Instagram – can reduce weight and appearance dissatisfaction, as well as improve mood. It also examined theoretically-related personality variables that were hypothesized to lead to differential effects of the intervention including trait self-compassion, social appearance comparison, thin-ideal internalization, and physical appearance perfectionism. The findings demonstrated different effects for the intervention depending on the order of delivery.

The intervention task asked participants to spend three minutes writing a paragraph to themselves “expressing kindness, compassion, and understanding towards yourself regarding your weight, appearance and body shape” (Breines & Chen, 2012; Moffit et al., 2018). This was compared against a simple sorting task where participants were asked to sort neutral words into two categories (e.g., colours or shapes) to control for the passage of time and possible rumination about body image. To examine the effectiveness of this intervention in relation to social media use, participants were asked to engage in a forced comparison whereby they compared their attractiveness and body to a thin-ideal model on Instagram. Testing this intervention in the context of a force-comparison task replicated previous research on the effects of thin-ideal imagery (McComb & Mills, 2021; Mills et al., 2002; Tiggemann & Polivy, 2010; Tiggemann & Slater, 2004) and examined effectiveness of a self-compassion task in mitigating negative changes to body image and mood as a consequence of social comparison to thin ideal imagery.

As previously mentioned, most micro-intervention research has been implemented after exposure to a body image threat as a form of “recovering” from psychological distress (Brown & Tiggemann, 2016; Moffitt et al., 2018; Seekis et al., 2017). To examine the effectiveness of this current intervention in the context of social media use, it was relevant to first test this task in the traditional format of implementing *after* a body image threat (Study One). As a separate but related area of inquiry, Study Two examine the effects of an intervention delivered *before* a body image threat. Grounded in Gross’s (1998) theory of emotional regulation processing, this study expanded upon current literature to investigate whether a micro-intervention could *prevent* psychological distress related to social media use before it occurs. The use of the same forced-comparison task in both studies were intended to standardize the Instagram task and allow for a discussion of overall effects.

In regard to body image variables, completing the self-compassion intervention after social media use did not improve weight and appearance dissatisfaction over and above the control task (Study One). Contrary to previous research (Brown & Tiggemann, 2016; McComb & Mills, 2021; McComb et al., 2021; Saiphoo & Zahra, 2019), there were no significant increases in body dissatisfaction following Instagram use in Study One. Across both conditions, there were significant decreases in body dissatisfaction following the exposure to thin-ideal Instagram images demonstrating equivalent effects for the self-compassion and control tasks. In Study Two, however, there were significant differences between the two conditions such that those who completed the self-compassion intervention before comparing oneself to the thin-ideal images reported less weight and appearance dissatisfaction after social media use than those who completed the control task. These differential effects demonstrate that the order of delivery of this brief intervention is significant to the effects on body dissatisfaction. One possible

explanation may be that completing the self-compassion intervention after social media use may only distract from body dissatisfaction, instead of foster genuine feelings of self-compassion that can help recover from body image distress. This level of distraction may be equivalent to the distraction provided by the neutral word sorting task, especially considering that the absence of post-exposure body dissatisfaction found within this study. Further research is necessary to examine this intervention after increases in body dissatisfaction to rule out a spurious finding. Taken together, this suggests that this intervention may be most effective when delivered before social media use. As reviewed in the Introduction, the mechanism of action could be antecedent-focused emotion regulation, whereby asking individuals to express compassion or kindness towards one's body may have dampened the effects of the thin-ideal images and interrupted an emotional response tendency before it occurs (Gross, 1998). In other words, preventing the body dissatisfaction that commonly occurs after social media use may be the most effective way to apply a self-compassion writing intervention. Implementing the intervention after social media use may be less effective due to the necessity of recovering from the harmful effects, even if they are small. Although not measured within these studies, another explanation may be that completing the self-compassion task before the exposure to thin-ideal images may have fostered greater body compassion (Altman et al., 2020). As previously discussed, this may have allowed for less identification with any body image distress, greater acceptance of this experience, and a sense of common humanity whereby others may also experience body dissatisfaction during social media use. It would be worthwhile to incorporate measures of body compassion in future self-compassion intervention research.

There were also differential findings across the studies regarding the effects of the experimental manipulations on mood variables. Study One found that the decreases in positive

affect (i.e., happiness and confidence) that occurred after comparing oneself to the thin-ideal images were mitigated by the self-compassion intervention when it was completed after exposure to social media. However, Study Two found that when the intervention was delivered before social media use, there were immediate decreases in anxious and depressed mood but no changes in positive affect. Furthermore, these decreases were not maintained after exposure to the Instagram images. In an opposite pattern from the findings related to body image, it appears that this intervention is most effective for mood variables when delivered after the psychological distress occurs; when delivered after social media exposure, it can restore positive mood states but, when delivered before, the demonstrated decreases in negative mood cannot prevent subsequent declines in negative and positive affect. This may be because the effects of social media may be too large to buffer against with antecedent-focused emotion regulation. Alternatively, it may be that mood states are more vulnerable to fluctuations than body image. Completing a self-compassion task that highlights body image may facilitate increased compassion towards one's body, which has been associated with increased in positive affect and decreased negative affect (Altman et al., 2020). The findings in Study One may be reflecting these state changes in mood. As such, a longer-term follow up would be helpful to determine whether the increases in positive affect from Study One could be maintained for longer intervals.

These studies also examined the moderating role of personality variables on the effectiveness of this intervention. In regard to trait self-compassion, it appears that when participants completed the intervention task after scrolling through social media, trait self-compassion did not moderate the outcomes (Study One). However, when individuals completed the intervention before viewing thin-ideal images, higher levels of trait self-compassion led to higher levels of confidence and lower levels of this trait led to lower levels of confidence after

social media use (Study Two). These differential findings suggest that the order of delivery can influence the efficacy of this intervention for individuals on the extreme ends of trait self-compassion, specifically in regard to confidence. As previously mentioned, the findings in Study One may reflect the variability of self-compassion, whereby completing the intervention or control task after social media use nullified any potential differentiating effects related to trait levels. Alternatively, completing the self-compassion task before social media use may have provided the cognitive tools necessary to prevent the expected decreases in positive mood (Kohler et al, 2021). Individuals high in trait self-compassion may have been more amenable and cognitively congruent to the demands of intervention task which, in turn, led to greater confidence. In the opposite direction, those low in trait self-compassion may have struggled more to express self-kindness or compassion towards one's body. Accordingly, these individuals reported lower levels of confidence following social media use. Tailoring this intervention to explicitly address mood, and not just body image, may help to actively target positive and negative affect. Moreover, using common humanity to normalize the challenges of being self-compassionate may be more appropriate for people low on trait self-compassion. Of note, a marginally significant moderation effect emerged in Study One in a similar direction, such that those with higher trait self-compassion trended towards higher confidence after social media use if they completed the intervention. This pattern of results raises questions about the relationship between self-compassion and confidence; perhaps this mood variable is more influenced by trait self-compassion than other mood variables (e.g., anxiety, depression, and happiness).

Across both studies, a propensity towards social appearance comparison did not lessen the effectiveness of this intervention. In other words, individuals who were high and low on trait social appearance comparison tendencies reported equal benefits from this intervention in regard

to body image and mood. This is a promising finding given the moderating role of social appearance comparison between social media use and psychological distress, including body dissatisfaction and negative affect (Jarman et al., 2021; Sherlock & Wagstaff, 2019). The benefits of this intervention may have been facilitated by a negative association between self-compassion and social appearance comparisons (Andrew et al., 2016; Duarte et al., 2015; Homan & Tylka, 2015; Ntoumanis et al., 2020). By actively engaging in a self-compassion task, the negative effects of social media may have been lessened. Alternatively, asking all participants to engage in a forced comparison to the thin ideal images may have nullified individual differences in this trait tendency. Accordingly, natural variations in trait appearance comparisons may not have been distinct enough to moderate the outcome variables post-exposure. However, based on the current finding, these studies suggest that a self-compassion intervention may be an appropriate resource for women high on social appearance comparisons, regardless of the order of delivery. Specifically, the self-compassion task equivalently improved positive affect when delivered after social media use and prevented increases in body dissatisfaction when delivered before social media use.

In examination of other personality variables, previous research would suggest that the self-compassion intervention would be less effective for individuals who tend to worry about imperfections and the desire for others to admire one's appearance (i.e., physical appearance perfectionism), which was partially supported in Study Two. When completing the intervention task after a body-image threat, individuals high on this trait derived equivalent benefit from this intervention. This is promising given previous research which demonstrated that women high on physical appearance perfectionism experienced greater appearance and weight dissatisfaction and less confidence compared to those low on physical appearance perfectionism when forced to

compare oneself to thin-ideal images on Instagram (McComb & Mills, 2021). Study One demonstrated that, withstanding the forced comparison, engaging in a self-compassion writing task after social media use led to equivalent benefits for those high on this trait. Notably, however, for individuals with a lower tendency to worry about physical imperfections, completing the self-compassion task before Instagram use led to higher levels of happiness than those high in this trait who completed the control task. Instead, for those high in this trait, completing this self-compassion task before social media use led to lower levels of happiness after social media use. As such, this intervention had additional benefits for women low on this trait who received the intervention before exposure to threatening images, demonstrating a buffering effect for happiness. This effect does not exist for those with high physical appearance perfectionism tendencies. Altogether, these findings suggest that this intervention may be appropriate for individuals with varying levels of physical appearance perfectionism, but would be less beneficial to those high on this trait and especially beneficial for those low on this trait who engage in the writing task before Instagram use.

Another potential moderating variable examined in both studies was the extent to which women tend to internalize the thin-ideal body type. As with previous personality variables, the current studies found that this intervention was equally beneficial for those high on this trait, regardless of the order of delivery. Internalizing the thin ideal has been found to moderate the relationship between social media use and body dissatisfaction (Scully et al., 2020; Vartanian & Dey, 2013). This finding suggests that engaging in a self-compassion writing task before or after Instagram use can promote a kind and compassionate mindset that have varying effects on body dissatisfaction and mood. Previous research has found that thin-ideal images were less influential on internalization when self-compassion was high (Tylka et al., 2015), which may provide a

partial explanation for the effectiveness of this intervention. This suggests that this intervention is appropriate for individuals with varying levels of thin-ideal internalization, regardless of the order of delivery.

### **Strengths and Limitations**

There are some important limitations to consider when interpreting the results of these studies. The first limitation may be the self-compassion task's focus on the self-kindness, without much of an emphasis on mindfulness and common humanity. While these studies were replicating the methods used by previous researchers (Moffitt et al., 2018), the null findings for changes in body dissatisfaction in Study One may be related to the absence of two of the three facets of self-compassion (Neff, 2003). A focus on self-kindness may be sufficient to prevent increases in body dissatisfaction, as demonstrated in Study Two, but may not be potent enough to recover from decreases after they have occurred. Another limitation was the lack of a control group that could rule out the positive effects of writing on psychological states. Some research suggests that expressive writing alone may improve psychological distress (Baikie et al., 2021; Soliday et al., 2004; Smyth et al., 2008). A control group that involved a neutral writing task would help reduce the likelihood that this was the cause the observed for improvements in happiness and confidence in Study One. Additionally, the lack of a long-term follow up (i.e., one hour, one week, or one month after the intervention) limits the ability to address the maintained effectiveness of this intervention beyond immediate effects. Given the novelty of applying this intervention to social media use and examining order effects, first investigating the immediate effects of this self-compassion writing task was an appropriate goal for this research. An additional consideration is forced comparison to only one type of body ideal (i.e., the thin-ideal). While this body-ideal has dominated Western media for many years, new research suggests that

other body-ideals such as a “fit-ideal” and “slim-thick-ideal” are becoming more prominent and may even be more harmful to body image than the thin-ideal (McComb & Mills, 2022). This is a new area of research that future intervention studies should begin to address. A forced comparison task may have also limited the ability to detect a moderation effect for trait social comparisons. Another limitation may be the online format. This allowed for less controllability of the research environment, and it is possible that participants may have opened other web browsers or lost focus while completing the experiment. However, the data was cleaned to exclude participants who did not complete the survey, had large amounts of missing data, or did not engage in the intervention tasks to reduce the likelihood of inaccurate data. Finally, this study was limited by the sample characteristics. Participants were mostly white women between the ages of 18-55 suggesting that the results cannot be generalized outside of this population to men, nonbinary or transgender individuals, or younger or older women. However, the preliminary success of this intervention is promising given our sample’s demographic similarity to most eating disorder patients (i.e., white and high socio-economic status; Barry & Grilo, 2002; Nevenon & Norring, 2004), who have markedly high body dissatisfaction.

Despite the noted limitations, there were a number of strengths of this study. One strength was the replication of previous research that Instagram use can lead to body dissatisfaction (Study Two; Hogue & Mills, 2019) and changes in mood (Studies One and Two; Berry et al., 2018; Fardouly et al., 2015). This is an important finding that researchers should continue to replicate and explore to understand the nuances of this relationship. Another strength is the external validity of an online study format. Because Instagram is an online social media application that individuals use at home, presenting these images in the same environment gives a realistic impression of how they feel when viewing thin-ideal images on Instagram and the

effects of the intervention at home (verses in a lab setting). This format also reduced the likelihood of changes that could otherwise be attributed to the presence of an experimenter or therapist (i.e., experimenter and therapist effects). These studies were also strengthened by large sample sizes. This increased confidence in our results through a variety of responses from women across North America. Finally, Study Two provided a novel contribution to propose an intervention that can prevent the well-established body dissatisfaction and mood disturbances that occurs following social media use (Brown & Tiggemann, 2016; Fardouly et al., 2015; McComb & Mills, 2021; McComb et al., 2021; Saiphoo & Zahra, 2019). It is advantageous to continue investigating ways to prevent, rather than recover, from psychological distress.

### **Future Research**

Future studies should continue investigating self-compassion interventions for body dissatisfaction and mood. As previously mentioned, there may be a benefit to a multifaceted intervention that encompasses all three components of self-compassion (i.e., self-kindness, common humanity, and mindfulness). And, given that social media affect both body image and negative affect (Brown & Tiggemann, 2016; Fardouly et al., 2015), targeting future variations of this intervention towards both constructs would be valuable. There are also many other self-compassion exercises developed by Kristen Neff (2022) that should be explored given this study's preliminary success. Additional research should also examine the various populations for whom this intervention is best suited. As indicated in this study, individuals with high levels of trait self-compassion and low levels of physical appearance comparison of thin ideal internalization may uniquely benefit from this intervention, especially when delivered before social media use. Those low on trait self-compassion may need a tailored intervention to prevent increases in depressed mood. This intervention should also be examined without a forced

comparison task to better examine the moderating role of trait social appearance comparisons. Moreover, examining the sustained effects of this intervention through a one-week or one-month follow-up would provide valuable information about the efficacy of this intervention. Perhaps there is a notable practice effect that may emerge from repeated use of this intervention. Future studies may consider asking participants to practice this intervention before or after naturalistic Instagram use to gauge the real-world effects and measure the long-term effects of practicing this writing task. These studies should also examine the effects of a self-compassion intervention with force-comparisons to different body ideals (i.e., the fit-ideal and slim-thick-ideal), to further mitigate threats to body image. Researchers may also want to expand the population of interest to especially vulnerable groups such as restrained eaters or eating disorder patients who report higher levels of body dissatisfaction (Haynos et al., 2016). Finally, researchers for future studies may consider conducting in-lab testing to control for confounding variables.

### **Clinical Implications**

This intervention has the potential to mitigate the negative effects of Instagram use on mood (Study One) and body dissatisfaction (Study Two), depending on the order of delivery. Based on these findings, this intervention can be strategically applied to target different psychological experiences. To recover from declines in positive mood, women might consider engaging in this 3-minute writing task after scrolling on Instagram. Alternatively, for those looking to buffer against weight and appearance dissatisfaction, they may choose to engage in this task before opening their Instagram application. The mitigation of body image distress is important given the reliable associations with negative outcomes including low self-esteem, depression, and disordered eating (Paxton et al., 2006; Slane et al., 2014). Those with low levels of trait self-compassion and high levels of physical appearance perfectionism should be mindful

of the negative effects on confidence and happiness and may choose to engage in another intervention strategy. Further, the simplicity and brevity of this intervention has the potential to be widely disseminated as a “self-help” strategy that can be used before or after social media use. However, as noted above, clinicians should consider sample characteristics from this study (e.g., predominantly white females between the ages of 18 and 55) before making confident recommendations.

## **Conclusions**

Taken together, this program of study demonstrated that a brief, 3-minute self-compassion writing intervention is effective at reducing the effects of social media on body dissatisfaction and mood. The effects of this intervention differ depending on the order of delivery, whereby one can prevent changes in body dissatisfaction by engaging in the task before making forced comparisons to thin ideal images on Instagram (Study Two) and recover from declines in positive affect by engaging in the task after social media use (Study One). These studies also found that personality variables may moderate the effectiveness of these interventions. Specifically, individuals high on trait self-compassion reported higher levels of confidence (Study Two) when they engaged in the intervention before or after social media use. Those low on trait self-compassion reported less confidence when they completed the intervention before comparing themselves to the Instagram images (Study Two). Additionally, individuals low on physical appearance comparison reported higher levels of happiness when they completed the self-compassion intervention before Instagram use, while those high in this trait reported lower levels of happiness (Study Two). These findings demonstrate how a brief self-compassion intervention can be applied to social media use to help mitigate psychological distress. Considering the sample characteristics, disseminating this information to a similar

population may help to reduce the high levels of distress reliably reported by so many women across North America. This simple intervention may be used as a tool to help address this ongoing issue while future research continues to investigate alternative interventions that may be suitable to even larger, or higher risk, populations.

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