

Compassion over competition: The momentary and longitudinal benefits of adopting a
caregiving mentality in the face of appearance comparisons

by

Kiruthiha Vimalakanthan

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Examining Committee Membership

The following served on the Examining Committee for this thesis. The decision of the Examining Committee is by majority vote.

External Examiner	Susan Wnuk, Ph.D. Assistant Professor, University of Toronto
Supervisor	Allison Kelly, Ph.D. Associate Professor, University of Waterloo
Internal Members	Abigail Scholer, Ph.D. Associate Professor, University of Waterloo
	Uzma Rehman, Ph.D. Associate Professor, University of Waterloo
Internal-External Member	Sharon Kirkpatrick, Ph.D. Associate Professor, University of Waterloo

Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Social comparisons in the appearance domain are a harmful yet prevalent practice, increasing body dissatisfaction and negative affect among women (Leahey et al., 2011). The adverse effects of making upward appearance comparisons – that is, comparing one’s appearance *unfavourably* to another’s appearance – on body dissatisfaction and eating pathology have been consistently established in the literature (Cattarin et al., 2000; Leahey et al., 2007; Lin & Kulik, 2002; Tiggemann & McGill, 2004). Yet women continue to make them, and consequently, continue to suffer from their harms. Festinger’s (1954) social comparison theory suggests that the negative effects of upward appearance comparisons could be counteracted by making subsequent downward appearance comparisons. That is, after comparing one’s appearance unfavourably to a given individual, this could translate to comparing one’s appearance *favourably* to a different person’s appearance or making favourable comparisons to the initial individual in other domains (e.g., intelligence, popularity). Research suggests, however, that this approach of counteracting upward appearance comparisons with downward comparisons is not consistently helpful (Rancourt et al., 2016; Lin & Kulik, 2002) and may also be problematic in its perpetuation of a competitive orientation toward others. Inspired by Gilbert’s (2000) social mentality theory, the present dissertation tests a novel way to mitigate the negative effects of upward appearance comparisons: the adoption of a compassion-based caregiving mentality (i.e., cultivating an attitude of care and compassion) towards the targets of unfavourable appearance comparisons. Three experimental studies sought to programmatically investigate the potential in harnessing the caregiving mentality to buffer the negative consequences of appearance comparisons on women’s body image, and more broadly, psychological and social well-being. Study 1 compared the momentary effects of adopting a caregiving mentality relative to remaining in a competitive

mentality by making favourable comparisons towards the target of a recalled unfavourable appearance comparison. A control condition in which participants were guided to distract themselves from the feelings of the unfavourable comparison altogether was also included. Results suggested that the adoption of a caregiving mentality towards unfavourable appearance comparison targets was as helpful in reducing state body dissatisfaction as making favourable comparisons in non-appearance domains, and that both interventions were more effective than the control intervention. In addition, the caregiving mentality strategy more significantly increased state feelings of peacefulness, and more significantly reduced state distress as well as state motivation to make further appearance comparisons, than the competition and control conditions. Study 2 sought to replicate these positive momentary benefits to affective and body-specific well-being in the context of a live appearance comparison and in a social media setting using the same three intervention conditions as Study 1. Study 2 also incorporated the additional outcomes of self-compassion and feelings of social safeness and included a novel behavioural task after the main intervention to investigate appearance comparison behaviour through the proxy variable of participant viewing time of pre-selected social media images. Results reinforced the momentary benefits of adopting a caregiving mentality towards the targets of unfavourable appearance comparisons. Again, while the caregiving mentality strategy was not unique in improving body dissatisfaction, affect, and social safeness, it had significantly greater impacts in reducing comparison motivation and boosting self-compassion and feelings of connectedness (towards comparison targets). Exploratory analyses from the behavioural task were consistent with these findings, suggesting that those who practiced remaining in the competitive mentality subsequently spent more time viewing comparison-oriented images. Study 3 sought to determine whether after an unfavourable appearance comparison, the adoption of a

caregiving mentality may be more beneficial than remaining in a competitive mentality to participants' affective and body-specific well-being, their comparison motivation, self-compassion, and social safeness. Of note, Study 3 also built on the previous studies by directly comparing comparison context (live vs. recalled comparison) as well as by investigating the relative effects of momentary and longitudinal practice of the strategies of interest. As with Studies 1 and 2, participants practicing either strategy reported momentary benefits to affect, body dissatisfaction, self-compassion, social safeness/connectedness, and comparison motivation. The caregiving mentality strategy proffered some advantages relative to the competitive mentality strategy, including increased positive affect, decreased body dissatisfaction and motivation to make appearance comparisons, and greater feelings of connectedness to the comparison target. Benefits were sustained longitudinally by the practice of either strategy, but outcomes did not differ as a function of condition. Longitudinally, although all participants reported lower body dissatisfaction, restrained eating, and body image comparison orientation, as well as higher self-compassion and social safeness, those who had practiced the caregiving mentality strategy reported greater reductions in body image comparison orientation and significantly increased feelings of social safeness. Taken together, findings from this program of research suggest that while it is clearly beneficial to intervene in some way following an unfavourable appearance comparison, adopting a compassionate care-driven attitude towards comparison targets has significant momentary advantages to well-being. When practiced over even a few days, it also leads to increases in social safeness and importantly, reduces body image comparison orientation. Findings suggest adopting a caregiving mentality may offer women are relief from the competitive mentality that keeps them entrenched in the vicious cycle of comparison.

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Review of Background Literature and General Introduction

What It Means to Compete

At its core, *competition* is a condition that arises when two or more parties strive for a finite resource or a goal that cannot be shared. In both human and non-human evolutionary history, competition within and between species for biological resources such as food, water, territory, and mates has been a powerful ecological force (Keddy, 2001). While we still vie for these tangible resources, humans today also compete over more intangible rewards, such as power and status. In general, we have extended the practice of competition beyond what is needed for basic survival to many more domains; we see this in education, sports, business, politics, and so on.

The question of whether our drive to compete is an inborn biological trait that co-evolved with our basic need for survival or the product of social learning remains contentious and unanswered in academia. However, among laypeople, the idea of '*healthy competition*' has long been held to be a driving force in our development – at all levels of society. Believing in its motivational power, its enjoyability, and its potential to build character and resilience (Kohn, 1986), we compete (and encourage others to compete) with each other, from childhood to senescence, whether it is a science fair in grade school, college basketball, or a game of Bingo at a retirement home. Competition is an essential component of most nations' social structures: in economics, for example, competition is seen as vital to the maintenance of efficient markets; in politics, competition is fundamental to a democratic election. Even between nations, we regularly hold athletic competitions such as the Olympics to promote international goodwill.

It can also be admitted that human competition, whether between individuals or nations, is sometimes far from healthy. Broadly speaking, rising rates of psychopathology among Western society have been theoretically attributed to the increase of competitively-oriented behaviour (Gilbert, 1989). Consistent with this view, research has found higher rates of mental ill-health in social environments characterized to be more masculine and performance-oriented, such as Japan or Ireland (Arrindell et al., 2004; Arrindell et al., 2003). This is understandable when we consider the pressure we experience from ourselves or others in contexts of competition. The stress of competition can easily push us to abandon pro-social mores to protect our self-interest. Where there is competition, there is also often cheating (McCabe et al., 2001; Schwierien & Weichselbaumer, 2010): for example, in academics, we plagiarize; in sports, we dope; in business, we violate antitrust laws.

However, even beyond the problem of unfair practices often triggered by competition, our reliance on competition as a force to drive ourselves forward is arguably becoming problematic, and the issue lies in the very definition of competition itself – that is, the condition of striving for a *finite* resource or a goal *that cannot be shared* (Collins, n.d.). As a species, we inhabit a planet that is running out of resources to sustain us. One apparent reaction to this collective realization, at least on an international level, has been an increase in competition to gain more resources to combat the problem: we continue to scuffle over territory (e.g., Crimea, Jammu and Kashmir), water rights, and even the right to emit carbon dioxide. However, as we experience an increasing frequency of major crises – droughts, wildfires, hurricanes/cyclones – in the face of these resource limitations, it becomes clear that our excessive reliance on competition instead of cooperation to address these problems may very well lead to our collective downfall. While our struggle to manage climate change has been an enduring big-

picture example of the perils of competing rather than cooperating, the current global COVID-19 pandemic has also brought the dark side of competition to light on an individual scale. Some consumers' panic buying and hoarding of sanitizer and personal protective equipment, for example, has led to shortages of these essential supplies for others who may need them more, such as medical professionals and other front-line workers who do the important work of caring for the community as a whole. What both of these examples highlight is that, whether at the international or individual scale, competition without caution can readily lead to a tragedy of the commons (Hardin, 1968), wherein by acting in our self-interest, we act against our collective well-being. In the short-term, having access to more water than one's neighbour (or neighbouring nation) may seem like a triumph, but over the long-term it is helpful to neither individual nor community. An argument can be made that by sharing our resources and connecting with each other to solve the problems that we face as a collective, we are much more likely to succeed.

The extensive research literature examining competition in various domains mirrors these real-world examples in establishing the shortcomings of relying on a competitive orientation to accomplish our goals. A meta-analysis (Johnson et al., 1981) of 122 studies compared the relative effectiveness of competitive, cooperative, and individualistic goal structures in promoting achievement and productivity. The authors found that cooperation is by and large superior to both competitive and individualistic approaches – that is, we perform much better when we are working with others than when we are trying to beat them or are working alone. Moreover, the *quality* of work created under competitive conditions is poorer (e.g., Pepitone, 1980; Whittemore, 1924): for example, in one study, children who made artwork in a competitive context (i.e., for prizes) demonstrated less creativity than those who made artwork in

a non-competitive context (Amabile, 1982). Overreliance on competition can also erode our intrinsic motivation; Deci and colleagues (1981) showed in one study that undergraduate students who believed they were competing with another student (i.e., placed with a confederate) to solve puzzles were later less intrinsically motivated to spend time working on a new similar puzzle (once the competition was finished) than those who initially solved puzzles without competing. Finally, a competitive orientation in problem-solving can lead to anxiety over one's productivity, which in turn reduces performance (Blau, 1954; Haines & McKeachie, 1967). On the other hand, cooperative goal structures, while more effectively producing achievement and productivity, also promote more self-esteem and positive self-concept than competitive and individualistic goal structures. They are highly correlated with a wide range of indices of psychological health, such as emotional maturity, strong personal identity, and an internal locus of control (Johnson & Johnson, 1989).

Our attitudes about others are largely dependent on the framework within which we interact, and a competitive orientation can come with significant interpersonal costs. By its very nature, a competitive orientation involves "mutually exclusive goal attainment" (Kohn, 1986, p.136), which pits individuals or groups against each other. Arguably, no study better demonstrates this than the Robbers Cave experiment (Sherif et al., 1961). Taking place as a field study in a summer camp, twenty-two demographically similar twelve-year-old boys were selected and randomly assigned to one of two groups, neither of which was aware of the other's existence. During the initial phase, the groups were kept separate and participants were encouraged to bond within their groups. After this phase, Sherif and colleagues (1961) arranged a competitive phase, during which the groups were made aware of each other's existence and then completed a series of competitive activities that pitted them against each other for rewards.

Situations were also devised whereby one group gained at the expense of the other; for example, when one group was delayed getting to a picnic, the other group had eaten their food. Inter-group behaviour during this competitive phase started with verbal expressions of hostility, such as name-calling, but quickly escalated to more aggressive behaviour (e.g., flag-burning, ransacking) to the point where researchers had to physically separate the groups (Sherif et al., 1961). The Robbers Cave experiment is a particularly vivid illustration of how intergroup conflict and hostility so easily and quickly arise in a competitive context, even among arbitrarily-formed groups.

Furthermore, our adversarial perspectives towards each other can easily extend beyond the context of competition such that we may have little empathy for our competitors even when we are no longer competing (Barnett et al., 1979). We may wish to see them fail, even if it does not mean that we succeed (Kohn, 1986). Kagan and Madsen (1972) demonstrated this in a study where they compared the behaviour of seven- to nine- year-old Anglo-American and Mexican children in situations where competitive action did not result in personal gain; the former group had been determined from previous research to be more competitive and less cooperative than their Mexican counterparts (Madsen & Shapira, 1970). Specifically, the researchers created an opportunity where participants were given the choice to have the experimenter take away another child's toy or let them keep it, but could not keep it for themselves. They found that 78% of the Anglo-Americans children (i.e., the more competitively socialized group) took the other child's toy away simply to prevent the child from having it, while Mexican children (i.e., the less competitively socialized group) did so only half as often (Kagan & Madsen, 1972). Even in situations where we do not personally gain from another's loss, our ease with being competitive may lead us to behave as if they are our rivals.

It is only within the context of cooperative structures that individuals are able to establish trust in and optimism about others and a sense of shared identity (Johnson et al., 2014). These opportunities are lacking in competitive structures, which can not only strain existing relationships, but prevent these relationships from developing at all. In the aforementioned Robbers Cave experiment, for example, intergroup hostility and aggression reduced only after a third and final phase involving teamwork-driven tasks where the two groups were required to cooperate with each other (Sherif et al., 1961). Taken together, these findings demonstrate that whatever our goals are, competitive frameworks often hinder rather than help us; it is within the context of cooperative frameworks that we can not only more effectively meet our goals, but also connect with others, flourishing both individually and collectively.

Social Comparisons: Helpful or Harmful?

In addition to the overt competitive goal structures that we put into place in educational, professional, and other social contexts, an arguably more ubiquitous form of competition occurs between individuals on a daily basis. Again, whether inborn or learned, Festinger's (1954) *social comparison theory* proposes that "there exists, in the human organism, a drive to evaluate his opinions and abilities" (p. 117). That is, in our desire to evaluate our own views and skills, we compare ourselves to others to determine our relative standing. This also occurs across domains – we may compare ourselves to others on the basis of appearance, intelligence, popularity, and so on. These social comparisons may occur *downward* (favourably), in which we establish others to be inferior in a given domain; or *upward* (unfavourably), in which we establish others to be superior in a given domain.

Engaging in either type of these comparisons has been shown to be a useful practice in the literature. Favourable comparisons tend to produce positive affect and boost self-esteem

(Gibbons, 1986; Hakmiller, 1966; Lemyre & Smith, 1985; Morse & Gergen, 1970), and are useful for self-enhancement in the face of social threats (Wills, 1981) or for coping with distressing life events (Wood et al., 1985). Unfavourable comparisons, while tending to produce negative affect and lower self-esteem (Morse & Gergen, 1970; Salovey & Rodin, 1984), can provide useful information about how we should evaluate ourselves in a given domain, and may serve as a source of motivation for self-improvement (Buunk et al., 1990; Collins, 1996; Helgeson & Taylor, 1993). The information we gain from making social comparisons influences our sense of satisfaction with ourselves and in a variety of life domains. Furthermore, the need to compare ourselves to others can be adaptive to our functioning: under conditions of threat or distress, favourable comparisons are often used to self-enhance or cope. Women diagnosed with breast cancer, for example, made significantly more favourable comparisons to other breast cancer patients on the basis of adjustment, physical status, and life circumstances (e.g., age, marital satisfaction) than they did unfavourable comparisons or ‘neutral’ comparisons to similar others (Wood et al., 1985). In effect, when these women made social comparisons, they mostly made comparisons to others in their situation whom they perceived to be less well off, ostensibly to enhance their own self-esteem. Moreover, consistent with Festinger’s (1954) ‘unidirectional drive upward,’ – i.e., our desire to perform better and better—the need to compare ourselves to others can be adaptive to our functioning, providing useful information about our performance and motivating us to work harder (Buunk et al., 1990; Collins, 1996; Helgeson & Taylor, 1993). Indeed, research has shown that unfavourable comparisons can have significant positive effects in real-world settings. For example, middle school students who compared themselves academically with peers who were slightly outperforming them improved in their own performance (Huguet et al., 2001). In another study, smokers who compared themselves to other

smokers who had successfully quit were more likely to succeed with their own quitting efforts (Gerrard et al., 2005). Taken together, it is widely accepted that the practice of making comparisons, whether favourable or unfavourable to oneself, can serve various helpful functions.

While making social comparisons can at times be adaptive for our well-being, research suggests that there is a clear upper limit to their utility. While everyone makes social comparisons from time to time, the tendency to do so varies across individuals, with varying psychological outcomes. Studies using the Iowa-Netherlands Comparison Orientation Scale (INCOM), which assesses dispositional tendencies to make social comparisons, have found that those high in social comparison orientation are more sensitive to/aware of others, report more uncertainty and instability of self-concept, and tend to have a less positive view of themselves (Buunk & Gibbons, 2006; Gibbons & Buunk, 1999). Further, individuals high in social comparison orientation are more likely to make personal inferences and behavioural changes based on the information they receive about their peers' behaviour: for example, in one study, when researchers asked college students how risky they thought impaired driving was and how common it was among their peers, only those high in social comparison orientation who thought it was more common ascribed less risk to the behaviour and subsequently engaged in it more (Gibbons et al., 2002). Research on the consequences of upward and downward comparison among those high in social comparison orientation also appears to diverge from what has typically been found in that literature: while favourable comparisons have traditionally been expected to serve an adaptive function (Wills, 1981), social comparisons, regardless of direction, often appear to affect individuals high in social comparison orientation negatively in terms of affect (Buunk & Gibbons, 2006; Buunk et al., 2001), and more acutely than those who are low in social comparison orientation (Gibbons & Buunk, 1999). This may be because those high in

social comparison orientation are concerned that they may be or become like their low status comparison targets (Buunk & Gibbons, 2006).

Although those high in social comparison orientation may more frequently engage in social comparison, we are all capable of adopting a competitive orientation. We frequently measure ourselves against our peers, and in doing so, we forget that trying to do well and trying to beat others are two vastly different goals. A notable American scholar once glibly defined wealth as “any income that is at least \$100 more a year than the income of one’s wife’s sister’s husband” (Mencken, 2012); indeed, research demonstrates that increased income boosts life satisfaction only when it rises relative to one’s peers (Boyce et al., 2010). In one study examining such concerns about relative standing, half of the participants indicated a preference for earning \$50,000 when the average salary was \$25,000 rather than earning \$100,000 when the average was \$200,000; this preference for relative over absolute advantage was even stronger in domains such as intelligence and attractiveness (Solnick & Hemenway, 1998). In another, researchers found that irrespective of whether employees at a call-centre reported holding mastery-based goals (i.e., performing better than they had performed before) or performance-based goals (i.e., performing better relative to others), they consistently relied on social comparison information over temporal comparison information to evaluate their performance – that is to say, they compared themselves to others instead of their own past performance (Van Yperen & Leander, 2014). These studies are two of many lending support to the position that not only do we all look to others to determine our own standing in various domains, but also that we may value doing better than others more than doing well for ourselves.

Similarly, while individuals high in trait social comparison orientation may be especially vulnerable to the negative affective consequences of social comparisons, we are all capable of

experiencing these downsides ourselves. Even if they serve as useful sources of information for our motivation and self-improvement, unfavourable comparisons ultimately result in negative affect and lower self-esteem (Morse & Gergen, 1970; Salovey & Rodin, 1984). It is also possible that these resultant negative self-attitudes can then in turn lead us to make even more social comparisons, perhaps as we strive to restore our injured sense of self: for instance, research suggests that those who are less happy make more social comparisons (Giordano et al., 2000; Lyubomirsky & Ross, 1997; Swallow & Kuiper, 1992). Even for those who are not high in trait social comparison orientation, the practice of making social comparisons can easily lead to entrapment in a cycle of constantly comparing oneself to others and becoming increasingly unhappy and uncertain about oneself and one's abilities.

The Problem of Appearance Comparisons

One domain in which social comparisons have consistently emerged as a singularly harmful practice is that of physical appearance – a troubling fact given their prevalence. Making more frequent appearance comparisons, whether upward or downward, is strongly associated with higher levels of body dissatisfaction and disordered eating in non-clinical populations (O'Brien et al., 2009); indeed, a meta-analytic review by Myers & Crowther (2009) of 156 studies produced a moderate and significant effect size ($d = 0.77$) for this relationship. The tendency to make appearance comparisons, regardless of direction, has been found to partially or fully mediate the relationship between sociocultural influences (e.g., media exposure, familial/peer influences) and body dissatisfaction and/or disordered eating (Keery et al., 2004; Thompson et al., 1999; Tiggemann & McGill, 2004).

Current research also suggests that women are especially vulnerable to the deleterious practice of appearance comparisons (Murnen & Smolak, 2015; Myers & Crowther, 2009). One

reason for this gender-based divergence may be differences in men's and women's daily exposure to sociocultural norms. Appearance norms encountered by women in daily life have been found to be more rigid, homogenous, and pervasive, and women are more frequently targeted by messages about the thin-ideal and its attainability; these rigid, homogenous norms are also more harmful to body image than the heterogeneous, flexible norms typically encountered by men (Buote et al., 2011). Within the appearance domain in particular, women make more unfavourable appearance comparisons and compare themselves more with unrealistic targets, such as models, relative to men (Morrison et al., 2004; Strahan et al., 2006). They are also more likely to experience distress and body dissatisfaction as a result (Strahan et al., 2006).

Although introduced decades ago, the idea of body dissatisfaction as a “normative discontent” (Rodin & Striegel-Moore, 1984)—a term stressing the extent to which women struggle to view their own bodies in a positive, or even neutral, light—remains strikingly relevant today. Women from all walks of life are threatened by rigid and often unrealizable appearance standards. The idea that women should pursue and compare themselves to an unrealistically thin body type is often propagated by the media and by the appearance-focused behaviours and conversations of family members and peers. These social pressures inevitably instill in women a harmful preoccupation and dissatisfaction with their bodies (Groesz et al., 2001; Tantleff-Dunn & Gokee, 2002) that often precedes disordered eating and eating disorders.

Research to date has consistently established the adverse effects of making unfavourable appearance comparisons on body dissatisfaction and eating pathology in particular (Cattarin et al., 2000; Leahey et al., 2007; Lin & Kulik, 2002; Tiggemann & McGill, 2004). Unfortunately, they are all-too common. In an ecological momentary assessment (EMA) study conducted over five days in an undergraduate population of women, unfavourable comparisons were found to be

the most common type of appearance comparisons made across a variety of different contexts (e.g., print media, social media, in person), and were associated with less appearance satisfaction (Fardouly et al., 2017). What is perhaps most concerning, however, is that women continue to make these unfavourable appearance comparisons even when doing so is detrimental to their body image (Strahan et al., 2006). In step with research from the broader social comparison domain suggesting that the negative consequences of unfavourable comparisons can in turn lead individuals to make even more social comparisons, there emerges a vicious cycle. It is those who are already highly body-dissatisfied and/or eating-disordered who make the most unfavourable appearance comparisons and subsequently, who most experience their harmful consequences (Groesz et al., 2001; Leahey et al., 2011; Leahey et al., 2007). Many studies have also linked appearance comparisons, and the unfavourable variety of these in particular, to worsening mood (Fardouly et al., 2004; Tiggemann & McGill, 2004). In an EMA study conducted by Leahey and colleagues (2007), the practice of making unfavourable comparisons on a daily basis was associated with increases in daily negative affect. These studies suggest that while much of the literature on the negative consequences of appearance comparisons is situated within the body image and eating disorders domain, these negative consequences also extend to our broader well-being.

Current Interventions for Appearance Comparisons

Although research has examined the prevalence and effects of appearance comparisons on women's body image, surprisingly little work has studied the factors that can help women weather the negative effects of such threats. In seeking to allay the harms of unfavourable comparisons more broadly, research drawing from Festinger's (1954) original social comparison theory has provided some ideas. However, the specific application of social comparison theory to

appearance comparisons is at odds with much of that work. For example, Festinger's (1954) claims that individuals will cease to make unfavourable comparisons if they become harmful to self-image, while consistent with much of the research on social comparisons in general (Friend & Gilbert, 1973; Hakmiller, 1966; Wills, 1981), is out of step with Strahan and colleagues' (2006) findings that women continue to make unfavourable comparisons even when these threaten their body image. Their findings also suggest that women tend to make more comparisons to irrelevant targets who do not otherwise fit into their social rank hierarchy, such as models. This again goes against broader research on social comparisons that suggests that people avoid making comparisons with irrelevant others due to a lack of information about them (Wood, 1989).

Research on interventions designed to address the harms of appearance comparisons based on Festinger's (1954) theoretical perspective is also mixed. The most studied approach to date is that of using favourable comparisons to counteract the negative consequences of unfavourable comparisons (e.g., Bailey & Ricciardelli, 2010; Lew et al., 2007). That is, women who make and are distressed by unfavourable comparisons to more attractive others could instead focus on comparing themselves to less attractive others. For example, van den Berg and Thompson (2007) found that participants who viewed images of others whom they perceived to be less attractive showed increases in body satisfaction and positive affect. Alternately, women could find other domains (e.g., intelligence, popularity) in which they are superior to the attractive comparison target. Work by Lew and colleagues (2007) supports the efficacy of this strategy: in this study, women with high body dissatisfaction first viewed pictures of fashion models. When participants subsequently made favourable comparisons with these models on

non-appearance domains (e.g., intelligence), they experienced more satisfaction with their body and weight, less appearance anxiety, and less desire to lose weight.

However, other studies challenge the universally protective effects of favourable comparisons. Research by Rancourt and colleagues (2016) suggests that the positive associations between these comparisons and body satisfaction found among Asian and Caucasian women do not extend to Hispanic/Latina women. On the contrary, for this group, favourable comparisons were as harmful as unfavourable comparisons with regard to their effects on eating behaviours and attitudes. In another study, women underwent a “dating game” simulation in which they were presented with either a thin or “oversized” peer “competitor.” Women in the former condition experienced decreased body satisfaction and confidence, whereas those in the latter condition did not experience any compensatory effects (Lin & Kulik, 2002). Furthermore, women who frequently make favourable comparisons tend to show an increased drive for thinness and dietary restraint (Lin & Soby, 2016). Taken together, it is clear that encouraging favourable comparisons to counteract the harms of unfavourable comparisons in the appearance domain is not a reliable strategy to reduce body dissatisfaction and disordered eating (Fitzsimmons-Craft, 2017; Leahey et al., 2011).

Such a strategy may be not only unreliable but also problematic: while making favourable comparisons, whether in the appearance domain or any other, may offer transient emotional benefits, it is costly in its perpetuation of a competitive orientation toward others. Research has shown that such an orientation is much less effective in helping us meet our goals (e.g., Johnson et al., 1981). Moreover, the routine adoption of such an orientation is harmful for our physical, psychological, and social wellbeing, undermining our ability to see others as potential friends and allies (e.g., Leahey et al., 2007; Leahey et al., 2011; Myers & Crowther,

2009; Sherif et al., 1961) while limiting our view of them to merely competitors, or perhaps more nefariously, threats. Indeed, research by Lin and Soby (2016) found that relative to women who make only one type of appearance comparison (i.e., exclusively favourable or exclusively unfavourable), women who engaged in both types reported more body image concerns and maladaptive behaviours such as dietary restriction and negative body talk. This is consistent with the broader literature in suggesting that an orientation towards comparison, regardless of direction, can be harmful.

From Competition to Compassion: A Social Mentality Theoretical Perspective

Festinger's (1954) social comparison theory falls short of fully explaining the nature of appearance comparisons, and the strategy of favourable comparisons fails to consistently buffer the harms of unfavourable appearance comparisons. How then do we intervene with women's maladaptive tendency to make unfavorable appearance comparisons? Gilbert's (2000) social mentality theory may offer a promising perspective. This theory suggests that humans can adopt various mentalities that guide our interactions with others. A social mentality "acts to generate *patterns* of cognition, affect, and behaviour into meaningful sequences that allow for the enactment of social roles" (Gilbert, 2000, p. 120). This choreography of brain activity requires both external signals (i.e., behavioural signals sent to us by others), internal processing systems that allow us to interpret and respond to those signals, and our own internal motives (Gilbert, 2005). For example, to build an affiliative role with others, we would need to detect and interpret signals from others as trustworthy, and hold personal desires of our own to be affiliative. Our social mentalities influence our construal of self and other such that the same situation might elicit different reactions depending on the activated mentality. For example, seeing another suffer may be a pleasurable experience if we are currently oriented towards competing with them, or in

contrast, a distressing experience if we are currently oriented towards caring for them (Gilbert, 2014).

These mentalities ultimately drive the formation of relationships that indirectly promote the evolutionarily-ingrained goals of survival and reproduction – including those based on caregiving/care-eliciting, cooperation and reciprocity, dominance/submissiveness, and sex (Gilbert, 2000, 2005). Gilbert (2005) outlines these archetypal social mentalities as follows:

- 1) *Care-eliciting*: This mentality addresses the issue of providing for and protecting ourselves, especially in early life. We use this mentality to form relationships with others who can provide protection (i.e., caregivers), and the necessary investment for survival (and in mammals, emotional regulation). Competencies of this mentality include seeking and assessing proximity to (an)other, making distress calls, and being responsive to signals of caregiving.
- 2) *Caregiving*: This mentality addresses the issue of threats to our young and/or vulnerable kin and allies. In humans, this mentality is capable of being activated in response to a whole range of others as well. We use this mentality to form relationships with others (i.e., infants) to provide investments of time, energy, and other resources that increase their chance of survival, growth, and reproduction. Competencies of this mentality include assessing and providing for others' needs, being responsive to distress (and in humans, empathy and sympathy).
- 3) *Alliance formation*: This mentality addresses the issue of constant infighting, allowing for the cooperation and teamwork that is often necessary to solve problems of survival. We use this mentality to form cooperative or affiliative relationships, inhibit aggression, share or exchange resources, befriend others, live in groups, and

reciprocate behaviour. Competencies of this mentality include judging how similar others are to us, whether they are in-group/out-group, and who is a desirable ally. In humans, this mentality is what orients us towards reciprocity, equity, fairness, and rights.

- 4) *Social ranking*: This mentality further addresses the issue of constant infighting, allowing for social cohesion. We use this mentality to compete for resources or to be 'chosen' by others for certain roles (e.g., mate, ally, leader), gain and maintain rank or status, and accommodate those of higher rank. In animals and early humans, physical strength was the most common determinant of rank, but in contemporary human society, determinants of rank vary and may include other qualities, such as attractiveness, intelligence, charisma, and so on. Competencies of this mentality include monitoring our strengths/abilities relative to others and being attuned to others' intentions so that we are able to engage or disengage from conflict/competition with those we perceive as weaker or stronger, respectively.
- 5) *Sexual*: This mentality addresses the goal of reproduction. We use this mentality to form sexual relationships, which can include attracting, being attracted to, courting, conception, and retaining our mates. This mentality can manifest differently depending on whether our goal is to make short-term or long-term sexual bonds.

Beyond our temperaments, our early experiences, especially how safe we feel in our environment, can shape our predisposition towards any given social mentality. For example, Gilbert (2005) suggests that we develop competencies of the caregiving mentality, such as warmth and compassion for others, based on our own experiences of warmth and care from others. If, in our early environments, others (e.g., caregivers) are able to instil a sense of

safeness, offer warmth and validation, and make us feel capable of being liked/loved, we may become predisposed to seek out others with whom we can enact cooperative or affiliative social roles. On the other hand, the mentalities giving rise to positive affect and warmth may be understimulated if our caregivers do not make us feel safe and warm, and/or instead instil a sense of threat or shame, which could lead to the over-activation of our threat-defence systems (Perry et al., 1995). When we lack this internalized sense of warmth and feel un-liked or unloved by others, we can often become very competitive and oversensitive to threat and rejection, predisposed towards striving to be valued by others or seeking power or status to ‘earn’ our place (Gilbert, 2005, 2014). Overreliance on this social ranking or *competitive mentality* as we term it moving forward, can leave us feeling defeated, inferior, rejected, shamed, or persecuted and consequently, vulnerable to various forms of mental ill-health (Gilbert, 2014).

When we make social comparisons, including those in the appearance domain, we likely have an activated competitive mentality, which orients us towards appraising and being guided by our rank or status relative to others. Our construal of the other is as a competitor for resources (e.g., food, mates) or status/power, and our main cognitive interest is to compare ourselves with them to determine who is superior or inferior in relevant domains. This mentality is especially active when individuals feel insecure in their social environments (Gilbert et al., 2009) – which is the case for many women struggling with body dissatisfaction for whom perceptions of being in an inferior social rank in terms of physical appearance then drive the need to compete to avoid inferiority (Pinto-Gouveia et al., 2014). Problematically, as outlined earlier, these social comparisons then lead to further body dissatisfaction.

The Caregiving Mentality and its Compassionate Underpinnings

Given the harms associated with overreliance on a competitive mentality, individuals who are highly prone to making social comparisons may find benefit in shifting to a different mindset altogether in their interactions with others – one that can foster social connectedness and reduce competitiveness. A promising option, then, is the aforementioned *caregiving mentality*, which is oriented towards supporting and connecting with others. When we adopt a caregiving mentality, we are able to see others as fellow human beings who share the common experiences of suffering and desires to be happy, rather than seeing them as rivals and competitors (Gilbert, 2005). The activation of the caregiving mentality should promote feelings of connectedness and warmth in relationships that can counteract the chronic distress triggered by unfavourable comparisons driven by the competitive mentality. These feelings of connectedness and warmth in our relationships with others, which Gilbert (2005) terms “social safeness,” should foster more stable forms of self-acceptance borne from a sense of shared humanity and are not contingent on our performance relative to others.

The benefits of adopting a caregiving mentality are well-documented in the literature. For example, such an orientation can be seen in the Buddhist tradition of loving-kindness meditation (LKM), which is used to guide practitioners in increasing their feelings of warmth and caring for themselves and others (Salzberg, 1995). Loving-kindness (or *metta*) is a Buddhist concept, referring to an attitude of unselfish and unconditional kindness towards all beings. It is described by Salzberg (2011, p.178) as “a quality of the heart that realizes how connected we all are...a form of inclusiveness of caring.” In LKM, practitioners are first asked to bring their focus to a person towards whom they already feel warmth and tenderness (e.g., a loved one); they are then asked to extend these feelings to themselves, and then a broadening circle of others (Fredrickson

et al., 2008). The intention of this practice is not just to cultivate such positive emotions during the meditation alone, but more broadly in one's life (Fredrickson et al., 2008). Research suggests that LKM, which likely activates the caregiving mentality, is associated with a variety of positive outcomes, both physical and psychological. Practitioners of LKM benefit both in the short-term, in the form of the positive emotions generated during the practice; and in the long-term, in the form of broader benefits to resilience and well-being (Fredrickson et al., 2008). Indeed, research suggests that LKM decreases negative affect, pain, depressive symptoms, and psychological distress, while boosting positive affect, mindfulness, physical health, life satisfaction, resilience, and feelings of social connection (Carson et al., 2005; Fredrickson et al., 2008; Hutcherson et al., 2008; Seppala et al., 2014).

An important output of loving-kindness and another central motivation of the caregiving mentality is that of *compassion*: “an orientation of mind that recognizes pain and the universality of pain in experience and the capacity to meet that pain with kindness, empathy, equanimity, and patience” (Feldman & Kuyken, 2011, p.143). Conceptualizations of *what* compassion is as a construct vary among researchers. Many view it as an affective state or emotion (Goetz et al., 2010; Lazarus, 1991), or even a blend of emotions such as sadness and love (Post, 2002; Shaver et al., 1987). Goetz and colleagues (2010), for example, define compassion as “the feeling that arises in witnessing another's suffering and that motivates a subsequent desire to help” (p. 352). In contrast, among Buddhist traditions and the academic approaches they inform (e.g., Kanov et al., 2004), intentionality and motivation are more central aspects of compassion than emotion, and it is thus commonly defined as an attitude or intention (MacBeth & Gumley, 2012; The Dalai Lama, 2001). Gilbert (2010), combining both Buddhist and evolutionary perspectives, conceptualizes compassion as a motivation that originates from the caregiving mentality, and

defines it as “a deep [motivated] awareness of the suffering of another coupled with the wish to relieve it” (Gilbert, 2009, p.13).

Across conceptualizations, however, most scholars agree that exercising compassion involves being aware of or sensitive to suffering within ourselves and others, being moved by this suffering emotionally and cognitively, and acting or feeling motivated to alleviate or prevent it (Strauss et al., 2016). Importantly, compassion is distinguished from basic non-human caring as it requires cognitive competencies that have evolved uniquely among humans, such as self-awareness, symbolic and systemic thinking, meta-cognition, reflecting on our past and being able to predict future consequences of our behaviour (Dunbar, 2017; Gilbert, 2019; Gilbert et al., 2019). In order to be sensitive to and turn toward suffering, we need to have the courage and willingness to engage with (instead of avoiding) suffering; we require the capacity to be emotionally moved and tolerate distress arising within ourselves and/or others; and we must be able to make sense of this distress with empathy and non-judgment (Gilbert et al., 2019). To try and alleviate or prevent suffering, we need to be able to work out what actions will be most helpful and generate the appropriate feelings (e.g., kindness, sympathy, concern) and behaviours (Gilbert, 2017; Gilbert et al., 2019). Compassion, in essence, is *purposeful caring* – a motivation carried out with mindfulness and deliberation, requiring the cultivation of both the *courage* to engage with suffering and the *wisdom* to help alleviate or prevent it (Gilbert et al., 2019).

The benefits of compassion are well-documented in the literature. Cultivating and/or behaving compassionately towards others can have marked effects on our physical well-being, having been shown to reduce stress and mortality risk (Brown et al., 2003; Cosley et al., 2010; Poulin et al., 2013). For example, older adults who volunteer for other-oriented (i.e., compassionate) reasons have been found to have lower mortality risk, even four years later, than

non-volunteers or those who volunteer for self-oriented (i.e., self-beneficial) reasons – especially if the former group volunteered regularly and frequently (Konrath et al., 2012). Furthermore, cultivating compassion can decrease vulnerability to psychopathology such as depression, and increase psychological resilience and feelings of social connection (Hutcherson et al., 2008; Powley, 2009; Seppala et al., 2014; Shapiro et al., 2005; Shapiro et al., 2007). Interpersonally, those who act compassionately are perceived more strongly as leaders (Melwani et al., 2012). Structured more formally as an intervention, compassion-focused therapy (CFT), which was developed by Gilbert (2000) to help those who respond poorly to traditional therapy create more affiliative feelings towards themselves and others, and better develop their compassionate inner voice, has been shown to be a promising avenue of treatment for individuals with mood and anxiety disorders, particularly those who struggle with shame and self-criticism (Gilbert & Procter, 2006; Leaviss & Uttley, 2015).

The Benefits of Self-Compassion

As highlighted by interventions such as compassion-focused therapy, one's ability to care for and receive care from others is inextricably linked with one's ability to care for oneself; indeed, research from cross-sectional, neuroimaging, and experimental studies supports this connection (Crocker & Canevello, 2008; Longe et al., 2010; Neff & Beretvas, 2013). That is, compassion is also beneficial in its ability to promote the experience of self-compassion (Breines & Chen, 2013; Gu et al., 2020; Hermanto & Zuroff, 2016; Neff & Pommier, 2013), which is defined as the tendency to respond to personal distress and inadequacies with kindness, non-judgement, and the recognition that others face similar hardships (Neff, 2003). Within the framework of compassion as a motivation, Gilbert (2005) conceptualizes self-compassion as a form of self-to-self relating, in which one activates the same caregiving mentality used to care

for others to attend to and alleviate one's own distress. Consistent with this view, Hermanto and Zuroff (2016) found that levels of self-compassion were highest among individuals demonstrating a combination of high care-seeking and caregiving tendencies. Higher levels of self-compassion have also been linked to higher levels of other-focused concerns, such as perspective-taking (Neff & Pommier, 2013). In an experimental study, recalling memories of caregiving, and actually providing care in a lab task, increased state levels of self-compassion (Breines & Chen, 2013).

Self-compassion itself has been linked to reduced psychopathology such as anxiety and depression and increased positive well-being (Marsh, Chan, & MacBeth, 2017; Neely et al., 2009; Neff et al., 2007; Zessin et al., 2015). It is positively correlated with positive affect and mindfulness, and negatively correlated with negative affect, rumination, thought suppression, and avoidance (Leary et al., 2007; Neff et al., 2007; Neff & Vonk, 2009, Raes, 2010; Thompson & Waltz, 2008). Importantly, it has been identified as a crucial source of resilience in the face of life stressors (Allen & Leary, 2010; Bluth & Neff, 2018); for instance, Neff and colleagues (2005) found that following a failure, those with higher self-compassion are more likely to use adaptive emotional coping strategies such as acceptance and reinterpretation, and less likely to suppress emotions. In more applied research, self-compassion has been associated with health-promoting behaviour intentions (Sirois, 2015); for example, in one study, a self-compassionate imagery intervention to combat smoking urges reduced daily smoking, especially among individuals with high self-criticism and a lower commitment to quitting (Kelly et al., 2010). Self-compassion has also been found to predict better outcomes, both among non-clinical populations struggling with body image or disordered eating, and among clinical eating disorder populations (e.g., Braun et al., 2012; Zessin et al., 2015).

On the whole, the literature supporting the caregiving mentality and its components suggests that it may be a promising perspective from which to intervene with social comparisons and their harms. Specifically, in activating the caregiving mentality to cultivate compassion towards those we may initially perceive as competitors or threats, we may be able to shift out from a competitive mentality and towards an orientation of connecting with and caring for them. Adopting this orientation could also increase feelings of connectedness and social safeness in our broader social environments, thus counteracting the harms of the social comparisons we are prone to making. We could also benefit from the positive physical and psychological outcomes that compassion has been found to provide. Furthermore, in cultivating compassion, we are able to indirectly promote the cultivation of self-compassion, which in itself is associated with a number of benefits but can be difficult to cultivate directly, especially for those who are highly self-critical, as those who make frequent social comparisons may be (Gibbons & Buunk, 1999; Gilbert et al., 2011).

A Caregiving Intervention for Appearance Comparisons

While the benefits of adopting a caregiving mentality and its components are well-documented, applications specific to the domain of physical appearance, body image, and eating have been limited to the study of self-compassion. Self-compassion has been linked to a number of factors related to body- and eating-related behaviour: it is associated with more intuitive eating, fewer body image concerns, lower drive for thinness, and less binge eating and eating-related guilt (Adams & Leary, 2007; Ferreira et al., 2013; Schoenefeld & Webb, 2013; Wasylikiw et al., 2012; Webb & Forman, 2012). Among women with a higher BMI, self-compassion may help to protect against eating disorder pathology and facilitate more positive body image experiences (Kelly et al., 2014). In clinical samples, self-compassion has been found to be a

positive predictor of treatment response over a 12-week program (Kelly et al., 2014), suggesting that it may facilitate remission of eating psychopathology. Self-compassion-based interventions (e.g., compassion-focused therapy-based imagery, self-talk, and letter-writing exercises; meditations; exposure to self-compassion quotes) have also found success in significantly reducing body dissatisfaction, body shame, eating disorder pathology, and appearance-contingent self-worth, while improving levels of body appreciation (Albertson et al., 2014; Gale et al., 2015; Slater et al., 2017; Toole & Craighead, 2016).

Research specific to the problem of appearance comparisons has found that self-compassion buffers their detrimental effects on body dissatisfaction, body appreciation, and quality of life (Andrew et al., 2016; Braun et al., 2016; Duarte, et al., 2015; Homan & Tylka, 2015; Moffitt et al., 2018). While this may be a promising approach to intervening with appearance comparisons, self-compassion as previously mentioned can be difficult to cultivate for frequent comparers (Gibbons & Buunk, 1999; Gilbert et al., 2011). Furthermore, given the uniquely interpersonal nature of appearance comparisons within the range of body-related threats, interventions developed from the caregiving mentality that primarily promote compassion for others may be quite well-suited to tackle the problem of appearance comparisons. My Master's research (Vimalakanthan et al., 2018) was the first to address this gap, testing the theory of whether a deliberate shift to the caregiving mentality would help to reduce appearance comparisons and their harms, especially among women with a high tendency to compare themselves to others – i.e., with high social comparison orientation (Gibbons & Buunk, 1999).

Specifically, we theorized that adopting a caregiving mindset after making unfavourable appearance comparisons – by generating compassion and kind feelings towards the targets of

those comparisons – would decrease the salience of the comparisons, diminish competitiveness, and ultimately lessen the tendency to make appearance comparisons. This should in turn reduce the body dissatisfaction and eating pathology with which these comparisons are associated. This approach, termed the *caregiving intervention*, was compared to the previously studied approach of making favourable comparisons to the same target on non-appearance domains, termed the *competition intervention*. We also included a control condition in which, after making unfavourable appearance comparisons, participants distracted themselves with a counting task, allowing us to account for the influence of general cognitive engagement on study outcomes. Outcomes of interest included levels of body dissatisfaction; levels of restrained eating; and body, eating, and exercise-related comparison orientation. Finally, social comparison orientation was also investigated as a moderator of intervention effect on outcomes: we hypothesized that it would be those higher in social comparison orientation—that is, those most ‘stuck’ in the competitive mentality—who would benefit most from the novel approach of cultivating a caregiving mentality.

After learning their randomly assigned intervention in an hour-long in-lab session, for the next 48 hours, 120 undergraduate women practiced the intervention whenever they made an unfavourable appearance comparison. Results supported the relative acceptability and feasibility of the caregiving intervention. The intervention to which participants were randomly assigned did not influence change in outcomes experienced over the 48-hour study period. However, our sample’s mean scores on outcome measures decreased from levels seen in clinical populations to scores more typical of non-clinical populations – a tentative suggestion that participants may have experienced clinically significant improvements over the course of the study, even if these changes were not statistically significant. However, trait social comparison orientation

moderated the effect of our caregiving intervention on outcomes. Among women who were higher in trait social comparison orientation, those who practiced the caregiving intervention reported greater reductions in body dissatisfaction, restrained eating, and body image comparison orientation relative to those who practiced the competition intervention. For women lower in trait social comparison orientation, those who practiced the competition intervention reported greater reductions in body dissatisfaction and restrained eating than those who practiced the caregiving intervention.

Overall findings suggested that for women who more often compare themselves to others, responding to unfavourable appearance comparisons by generating compassion and loving-kindness towards comparison targets was more advantageous than making favourable appearance comparisons towards targets on non-appearance domains. However, the reverse was true for those who were not as oriented towards comparing themselves to others. This study was the first to my knowledge to successfully apply social mentality theory to intervene with harmful appearance comparisons, and the first to demonstrate that cultivating compassion for others may benefit one's own body image and eating behaviour.

Dissertation Objectives

The theoretical and empirical literature reviewed above suggests that there may be potential in harnessing the caregiving mentality to help buffer the negative consequences of appearance comparisons on body image and psychological well-being, as well as to facilitate greater social connectedness. Cultivating a caregiving orientation toward unfavourable comparison targets may be an especially helpful approach for those who struggle with more frequent engagement in appearance comparisons or have higher body dissatisfaction, as these individuals are most vulnerable to becoming entrapped in a cycle of comparison and the negative

consequences thereof. Preliminary research conducted for my Master's degree has been promising in this regard, showing the effectiveness of cultivating a caregiving mentality, specifically among those with high social comparison orientation (Vimalakanthan et al., 2018). In my doctoral dissertation, I sought to build on and replicate my previous work by addressing some important unanswered questions. Specifically, I conducted three experimental studies in college and community women which sought to further examine the relative effects of cultivating a caregiving orientation toward the targets of unfavourable appearance comparisons versus a more competitive orientation involving the generation of favourable comparisons to the target in non-appearance domains.

Momentary Effects

In my Master's work, participants were introduced to and guided through their randomly assigned intervention in-lab, but then went on to practice their strategy without guidance during the 48-hour study period. Therefore, any changes experienced in this time frame presumably reflected the consequences of repeated practice of the strategy over the two days. Thus, the momentary effects of cultivating a caregiving mentality in response to a 'live' unfavourable appearance comparison remain unknown. Given that unfavourable appearance comparisons cause significant state distress and state body dissatisfaction (Cattarin et al., 2000; Heinberg & Thompson, 1995; Leahey et al., 2007; Lin & Kulik, 2002), it is important to know whether orienting to the comparison target in a caring way is helpful in the moment. This knowledge would also be valuable because the momentary benefits, or lack thereof, that someone experiences from practicing this strategy at the time of an appearance comparison is likely to influence their likelihood of continuing to use it (Michaelsen & Esch, 2021). In my dissertation, I therefore compared the momentary effects of being guided to either generate care and

compassion toward (caregiving intervention) or to make downward comparisons with (competition intervention) a recalled (Study 1) and live (Study 2) unfavourable comparison target on body-related and affective well-being.

Longitudinal Effects

In addition to examining the relative momentary effects of the caregiving and competition interventions, I wanted to examine the sustainability of such momentary effects over time as well as the relative effects of engaging in repeated practice of the strategies over several days (Study 3). It is possible that the competition strategy may be as beneficial as the caregiving strategy in the moment but fail to yield sustained benefits over time due to its reliance on the competitive social mentality. Examining both momentary and longitudinal patterns could potentially clarify some of the mixed findings in the literature on the efficacy of the downward comparison strategy in particular, which while beneficial in the short-term, could pose harm to overall well-being if routinely adopted in the long-term (e.g., Leahey et al., 2007; Lin & Soby, 2016).

Live vs. Recalled Comparison

I also sought to directly examine whether the comparison context – that is, a recalled unfavourable appearance comparison versus a live one – moderated the momentary effects of the interventions (Study 3). It seemed plausible that the context of the comparison may moderate the efficacy of the various interventions. For instance, individuals may be most emotionally attuned to – and therefore able to most accurately report on – the emotional experience of a comparison in vivo/live. However, research also suggests that recall of events reactivates the same brain regions involved at the time of encoding (i.e., experiencing) the event (Danker & Thompson, 2010). This means that individuals may still be as emotionally ‘in touch’ with the recall of a

comparison as they may be with the live experience of one. Moreover, prompting individuals to recall a comparison may bring to mind one that is more emotionally impactful than what they are able to generate in the moment. Thus, it is possible that different interventions may work best for these two different contexts. For example, a competitive approach may bring momentary emotional benefits following a live comparison, but may fall short when applied to a recalled comparison, which, by virtue of still being accessible in memory, may be associated with more intense feelings of inferiority than can be buffered by the competition condition. The caregiving intervention, on the other hand, may be harder to deploy ‘in the heat of the moment’ given the complete shift in mentality it entails. Instead, it may be a more useful approach to help individuals work through the potentially more deep-seated negative effects of a past appearance comparison. In this dissertation, I sought to explore these possibilities, recognizing that it would be advantageous to better understand the comparison context(s) within which women can most fully benefit from cultivating care and compassion towards a comparison target as opposed to making downward comparisons towards them.

Impact on Social Safeness and Self-Compassion

My Master’s work was limited in scope, examining the effects of the caregiving and competition interventions on outcomes tied to body image and appearance comparison motivation. In my doctoral work, I aimed to extend my investigation to the relative impact of these interventions on participants’ relationships with 1) others; and 2) themselves. Given that the caregiving mentality is theorized to have evolved to facilitate interpersonal connection and care (Gilbert, 2009), it can be argued that shifting to such a mentality could make women feel increased social safeness (Gilbert, 2005) – that is, more connected and warm in their broader social environment – especially after the heightened threat state of an unfavourable appearance

comparison. Further, the caregiving mentality could also be harnessed to facilitate *intrapersonal* connection and care (Gilbert, 2009); research suggesting that compassion can in turn promote self-compassion supports this claim (Breines & Chen, 2013; Gu et al., 2020; Hermanto & Zuroff, 2016; Neff & Pommier, 2013). Thus, in addition to examining outcomes tied to body image, affect, and the motivation to make further comparisons, I wanted to investigate the differential effects of the caregiving and competition interventions on social safeness and self-compassion (Studies 2 and 3), with the expectation that the former intervention would likely promote more social safeness and self-compassion in the aftermath of an unfavourable appearance comparison. This would suggest that the caregiving intervention offers psychosocial value beyond simply helping with body image-specific experiences.

Behavioural Outcomes

While I hoped to establish (and replicate) that a shift to the caregiving mentality could reduce women's appearance comparison motivation across all of my dissertation studies, I also wanted to investigate whether this shift could impact women's actual appearance comparison *behaviour* when given the opportunity. Thus, another objective of interest in this dissertation was to elucidate the differential impact of the caregiving and competition interventions on comparison behaviour through the incorporation of a behavioural task (Study 3). This inclusion would also have the added benefit of reinforcing the results drawn from self-report measures.

Social Comparison Orientation as a Moderator

A major objective of this dissertation was to demonstrate the benefits of the caregiving mentality in intervening with appearance comparisons for all women, and especially those who reported frequent engagement in appearance comparisons. One's dispositional tendency to make

social comparisons, or social comparison orientation, was also of interest: first, because of research suggesting that those who engage in social comparisons more frequently are more negatively affected by them; and second, because my Master's work had shown that the shift to the caregiving mentality after an unfavourable appearance comparison was most beneficial to those with high social comparison orientation. Therefore, I hoped to continue to examine trait social comparison orientation as a moderator of the effects of the caregiving and competition interventions on outcomes of interest (Studies 1 and 2).

Summary of Dissertation Aims

To summarize, my doctoral research sought to further test the effects of cultivating a caregiving orientation toward comparison targets in the body image domain and to compare this approach to a competitively-oriented one that involves making favourable comparisons to targets in non-appearance domains. Specific aims were: 1) to compare these orientations' respective *momentary* effects when practiced toward the target of an unfavourable appearance comparison that was recalled (Study 1) and live (Study 2); 2) to compare the sustainability of these effects over time (Study 3); 3) to examine whether the relative effects of the interventions differ as a function of whether the unfavourable appearance comparison is live or recalled (Study 3); 4) to examine the relative effects of these strategies on not only body image, affect, and appearance comparison motivation but also self-compassion and social safeness (Studies 2 and 3); 5) to examine whether the interventions differentially affect actual comparison behaviour (Study 2); and 6) to examine the moderating influence of social comparison orientation (Studies 1 and 2).

Study 1

Appearance Comparisons in the Moment

There is a great deal of research establishing the link between appearance comparisons and body dissatisfaction, as well as its other harms (Myers & Crowther, 2009). However, even on a momentary level, the impact of appearance comparisons on body dissatisfaction and other negative outcomes has been consistently demonstrated to be profoundly harmful (e.g., Heinberg & Thompson, 1995; Leahey et al., 2007; Stice & Shaw, 1994). This is especially true of upward (unfavourable) appearance comparisons, following which women have reported worsened state body dissatisfaction and negative emotional states, such as depression, anger, guilt, and anxiety (Cattarin et al., 2000; Heinberg & Thompson, 1995; Leahey et al., 2007; Lin & Kulik, 2002).

State-level research on appearance comparisons and their consequences has been conducted through a number of paradigms, perhaps most notably through in-lab manipulations, daily diary studies, and ecological momentary assessment (EMA; Shiffman et al., 2008). For example, in one seminal lab study, women were randomly assigned to watch commercials featuring actresses consistent or inconsistent with the thin ideal; and within each of these conditions, were also instructed to either make appearance comparisons to the actresses, to attend to the advertised products, or to simply watch the commercials (Cattarin et al., 2000). Women who watched the thin ideal-oriented commercials reported increased state depression, anger, and anxiety; and if explicitly instructed to make appearance comparisons, reported increased body dissatisfaction. However, even without explicit instructions, women who watched the thin ideal-oriented commercials reported making more appearance comparisons overall than women who watched the commercials that were not thin-ideal oriented. Interestingly, this pattern of results suggests not only that state levels of body dissatisfaction were likely impacted by frequency of

appearance comparisons, but also demonstrates a tendency for women to engage more in unfavourable appearance comparisons than favourable appearance comparisons (Cattarin et al., 2000).

Daily diary and ecological momentary assessment studies have replicated and extended these findings. In one example, Fitzsimmons-Craft and colleagues' (2015) two-week daily diary investigation of body, eating, and exercise comparisons identified them as "proximal triggers" (p. 257) for state body dissatisfaction. In another, Fitzsimmons-Craft's (2017) ecological momentary assessment of body, eating, and exercise comparisons during a two-week protocol found that women made unfavourable comparisons at a significantly higher frequency than favourable comparisons. Moreover, unfavourable body and eating comparisons were associated with increased state body dissatisfaction, while favourable body and eating comparisons generally failed to have any sort of buffering effect on eating pathology (Fitzsimmons-Craft, 2017). Finally, in a one-week ecological momentary assessment protocol, Leahey and colleagues (2007) further established that women with high body dissatisfaction engage in more comparisons and a greater proportion of unfavourable comparisons than women with low body dissatisfaction; and that for both groups, unfavourable comparisons were associated with daily increases in negative affect, guilt, and body dissatisfaction. Studies such as these not only help establish external validity, but also reduce dependency on participant recall: traditional trait-level self-report questionnaires may require individuals to draw on their memories over the past days, weeks, or months, which may be unreliable or systematically biased (Fitzsimmons-Craft et al., 2015). In overcoming such disadvantages of trait-based examinations of appearance comparisons and their outcomes, these frameworks provide valuable insight into the phenomenology of appearance comparisons.

In establishing the significant impact of appearance comparisons even immediately after they are made, this aforementioned body of research also highlights the immediacy for intervention with these comparisons. Firstly, these studies demonstrate that appearance comparisons, especially those that are unfavourable (as they often are), are harmful to women's state body dissatisfaction and affect. Secondly, they suggest an accumulative effect such that, as body dissatisfaction worsens, women are prone to making even more appearance comparisons, and that a greater proportion of those will be unfavourable. It thus follows that to buffer or prevent altogether the momentary negative consequences of appearance comparisons, it would be helpful to intervene in the moments following the comparison. Furthermore, it would also be helpful for such an intervention to arrest the cyclical nature in which these comparisons are propagated, perhaps by decreasing motivation to make such comparisons.

To date, studies eliciting appearance comparisons have either provoked them in the moment (e.g., Heinberg & Thompson, 1995), or invited participants to recall them (Fitzsimmons-Craft et al., 2015). The latter approach was used in this study, driven by evidence suggesting that the retrieval of specific event information is associated with reactivation of the same brain regions involved during encoding of this information (Danker & Anderson, 2010). That is, in recalling an event, one almost literally returns to the brain state in which one experienced the event. Specifically, the amygdala and other regions involved in emotional processing are reactivated during the retrieval of emotional information (Lewis et al., 2005; Smith et al., 2004), with some evidence suggesting that negative emotional memories in particular (i.e., unfavourable appearance comparisons) are associated with stronger sensory engagement during encoding and correspondingly robust sensory reactivation during retrieval (Danker & Anderson, 2010).

Study Objectives

Study 1 of my dissertation sought to determine whether in the moment of recalling an unfavourable appearance comparison, the adoption of a caregiving mentality might be more beneficial than adopting a competitive mentality (i.e., engaging in favourable comparisons vis-à-vis the target) or distracting oneself from the situation altogether. Specifically, would such a shift have in-the-moment benefits for participants' affective and body-specific well-being, and would participants subsequently be less motivated to make more appearance comparisons? It was hypothesized that participants who practiced the caregiving intervention in-lab would benefit from this shift in perspective over and above those assigned to the Competitive or Control conditions, such that they would see increases in forms of positive affect, decreases in forms of negative affect, decreased body dissatisfaction, and decreased motivation to make appearance comparisons.

A secondary and more exploratory aim of this investigation was to explore whether trait social comparison orientation – which in previous research had moderated the effects of the interventions on outcomes – would continue to exert an influence on this relationship even at a momentary level. Thus, it was hypothesized that those higher in social comparison orientation and therefore more entrenched in the competitive mentality, would benefit most from shifting to the novel perspective of the caregiving mentality.

Study Hypotheses

1. The caregiving intervention will be more beneficial than the competitive and control interventions to participants' momentary affect, body image, and comparison motivation.

2. Social comparison orientation will moderate the effect of condition on outcomes, such that those with high trait social comparison orientation assigned to practice the caregiving intervention will benefit most in terms of momentary affect, body image, and comparison motivation.

Methods

Participants

Results presented in this study originated from previously unanalyzed data collected from the same sample as was used in my Master's research (Vimalakanthan et al., 2018). An all-women sample was recruited via an online university research participant pool (44%) and campus- and community-wide advertisements (56%). In the interest of achieving external validity, recruitment materials advertised the study as one for "Self-Help Strategies for Body Dissatisfaction" and maintained reasonable transparency about the nature and purpose of the research. The description also stated that potential participants might not find themselves suitable for the study if they did not habitually make appearance comparisons (i.e., at least a few times a day). However, this caveat was not a formal exclusion criterion given that some women may not entirely be aware of how frequently they make comparisons. Participants chose their preferred compensation option: either one bonus participation mark allocated towards psychology courses, or \$10.

The final sample for this study consisted of 136 women with a mean age of 20.6 ($SD = 2.2$), and mean body mass index (BMI; kg/m^2) of 22.0 ($SD = 3.5$). Ethnic composition was as follows: 31.6% White/Caucasian, 27.4% East Asian, 14.5% West Indian/Caribbean, 9.4% South Asian, 6.0% Other, 4.3% Southeast Asian, and 3.4% Black/African. 2.6% of our participants declined to answer this question.

Measures

Moderating Variables

Participants in our study completed the following measure as part of a pre-lab questionnaire anywhere from one to eight days prior to the lab session in which this study was conducted.

Social Comparison Orientation. The 11-item Iowa-Netherlands Scale for Social Comparison Orientation (INCOM; Gibbons & Buunk, 1999) measured participants' tendency to compare themselves with others. Individuals higher in social comparison orientation as measured by this scale have been found to engage in more social comparisons than those lower on the scale (Gibbons & Buunk, 1999). Items (e.g., "If I want to find out how well I have done something, I compare what I have done with how others have done") are rated on a 5-point Likert scale ranging from 1 (*I disagree strongly*) to 5 (*I agree strongly*). Cronbach's alpha in the present sample was .79, indicating adequate internal consistency.

Dependent Variables

Due to the brief and immersive nature of this study, visual analog scales (VASs) were employed as a quick and minimally-distracting tool to measure dependent variables. These psychometric response scales allow respondents to specify their level of agreement to a given question or statement by shifting a pointer along a continuous line between two defined endpoints. Aitken (1969) argues that individuals may find it challenging to report on their emotions using the artificial verbal categories/labels used in verbal rating scales; in contrast, the non-verbal action of marking a place along a line may circumvent such a challenge and allow researchers to detect the small but meaningful variations that occur in emotional states

throughout an investigation (Kellner, 1971, 1972). Evidence indeed suggests that in frequent re-assessments of mood, VASs may be more valid measures than verbal rating scales (Folstein & Luria, 1973). Similarly, in measuring pain – the study of which often employs VASs – research has demonstrated them to be more valid and reliable measures (Price et al., 1983), and more so than verbal rating scales (Onhaus & Adler, 1975). Research has also suggested that VAS response distributions do not significantly differ from those of radio button or numeric entry questions (Couper et al., 2006).

VASs are becoming increasingly used in other research, including state-level work on body dissatisfaction and eating pathology (e.g., Boone & Soenens, 2015; Boone et al., 2012), with evidence of good validity and reliability (Cattarin et al., 2000; Heinberg & Thompson, 1995). For example, in one early study in this field, VAS measures of body dissatisfaction correlated significantly with the Body Dissatisfaction Subscale of Garner, Olmsted, and Polivy's (1983) Eating Disorders Inventory (Heinberg & Thompson, 1995). In addition to being encouraged by these precedents for the use of VASs, their use in the present study is arguably justified given that completing full scales for each dependent variable thrice in the same sitting would likely have been taxing for participants, would have significantly lengthened the duration of the study, and may have compromised self-report accuracy. Given the rapidity with which VASs are completed, they may have the best chance of capturing participants' emotions as they occur in the moment, as was the objective here.

Participants completed VASs on the following dependent variables: body dissatisfaction, motivation to make more appearance comparisons, distress, feelings of threat, feelings of pride, and feelings of peacefulness. In addition to the use of distress as a variable to assess global negative affect, the last three dependent variables were chosen to assess affect from the

theoretical viewpoint of Gilbert's (2009) tripartite model of affect regulation. This model differentiates between the affective systems associated with responding to threats (threat system), striving for and obtaining resources (drive system), and resting or feeling safe in one's environment (soothing system). Diverging from traditional viewpoints of positive and negative affect as two distinct dimensions (Watson et al., 1995a, b) and consistent with neurophysiological research on the subject (Depue & Morrone-Strupinsky, 2005), this model crucially highlights that there are two different forms of (and functions for) positive affect (Gilbert, 2009). Some forms of positive affect are linked to the behaviourally activating drive system, oriented towards seeking and deriving pleasure from rewards or accomplishments; for example, the feelings of pride one may experience from securing a 'wanted' item or state. Others are linked to the behaviourally de-activating soothing system, oriented towards "happiness as an inner state" (Gilbert, 2009, p.25) where one is content and not actively seeking or anticipating rewards; for example, the feelings of peacefulness one may experience from feeling safe.

Items appeared with the question next to a slider that participants moved to set their desired position on a scale affixed with labels corresponding to 0 and 100: for example, the question "RIGHT NOW, how do you feel about your body?" allowed participants to select a position between Extremely Dissatisfied (0) and Extremely Satisfied (100). Participants completed VASs at three different time points: 1) baseline (before comparison recall and intervention); 2) after recalling the comparison but pre-intervention; and 3) post-intervention.

Manipulation Checks

VASs were also used to perform manipulation checks throughout the study. Across conditions, participants were asked to complete three different items representing the essence of each condition: 1) how compassionate they felt towards the target of their recalled comparison;

2) how competitive they felt towards the target of their recalled comparison; and 3) how distracted they felt from the recalled comparison. Participants completed these items at two different time points: 1) after recalling the comparison but pre-intervention; and 2) post-intervention.

Procedure

Overview of Procedure

One to eight days prior to a lab session, participants electronically completed demographic and trait measures. During the in-lab session, participants were asked to recall a recent unfavourable appearance comparison. They were subsequently randomly assigned to practice one of three strategies to intervene with the negative consequences of the recalled comparison. They were taught to apply this intervention via an interactive audio-guide to the recently recalled comparison. Visual analog scales were used before, during, and after the intervention to collect data on various state dimensions of affect, body dissatisfaction, and appearance comparison motivation.

Pre-Manipulation

Upon recruitment, participants were directed to a Qualtrics survey in which the Information-Consent Letter was presented, and consent was obtained. Participants were also asked to provide demographic information as well as their weight and height, and to complete a pre-lab questionnaire assessing trait-like constructs. One to eight days after the completion of this questionnaire, participants were scheduled for the in-lab session with a researcher. All in-lab procedures were completed using Qualtrics on a desktop computer in a private room.

The first task was for participants to complete baseline VASs measures of the dependent variables: body dissatisfaction, motivation to make more appearance comparisons, distress, feelings of threat, feelings of pride, and feelings of peacefulness. They then listened to a series of audio clips with text accompaniment. These taught them about the prevalence of body dissatisfaction among women in contemporary society and the regularity with which the media communicates messages about appearance ideals. The clips also taught them about the ubiquity of appearance comparisons among women, especially in times of preoccupation or dissatisfaction with one's body. A wide variety of potential comparison targets (e.g., family members, friends, acquaintances, strangers) and settings (e.g., on social media, during lectures, on public transit, while spending time with friends) were suggested. Participants were then provided with an example of an unfavourable appearance comparison:

“One particular example might be that you checked Facebook last night and saw your high school classmate’s vacation pictures and noticed how much thinner she is now than you are.”

Next, participants were told that the goal of the in-lab session was to teach them a “self-help strategy” to intervene with appearance comparisons and their harms. In learning this strategy, participants were first asked to recall a recent distressing unfavourable appearance comparison:

“Now please think back to a recent time in which you started to compare yourself to another woman in terms of appearance – a real-life comparison that made you really feel inadequate and dissatisfied with your appearance or body. Really bring this comparison to mind focusing on the various aspects of the other person’s appearance that you thought were superior to yours.”

Experimental Manipulation

Participants were introduced to and led through their randomly assigned “self-help strategy.” All conditions included the following components: 1) an introduction in which participants learned about the benefits of the strategy; and 2) an interactive portion in which participants were taught how to apply the strategy to their recently-recalled unfavourable appearance comparison.

Caregiving Condition. Participants assigned to practice this self-help strategy were introduced to a rationale that normalized the competitive mindset adopted by those focused on making comparisons, while also discussing the disadvantages of this mindset, such as feeling self-focused and disconnected from others. They were then presented with the idea that they also have a compassion-focused mindset at their disposal, which is active when caring for others. A conscious shift to this compassionate mindset in response to making appearance comparisons was introduced as a strategy that could foster feelings of happiness and social connectedness. This strategy’s presentation and phrasing was adapted from Gilbert’s (2010) earlier work in compassion and social mentalities, and from loving-kindness meditation (Salzberg, 1995). In the main component of this condition, participants were taught to shift away from perceiving the target of their appearance comparison as a competitor and instead towards perceiving her as a fellow human being, and then asked to generate caring thoughts and feelings towards the target:

“In this compassionate mindset, shift away from seeing this person as a competitor, or someone who looks better than you, but instead focus on the fact that you are both human beings, and try to generate caring thoughts and feelings towards them. Really get in touch with the part of yourself that wants other people to be free from suffering and happy, and send these well-wishes to this person.”

In order to help participants adopt this mindset, they were asked to recall a time when they felt compassion towards another person or animal, bringing these intentions and feelings of compassion to mind. They were then asked to redirect that compassion to the target of their recalled appearance comparison:

“Imagine yourself expanding as if you are becoming calmer, wiser, stronger, and more mature...really able to care for or help that person. Pay attention to your body as you remember your feelings of kindness. Create a compassionate facial expression. Spend a moment with any expansion and warmth in your body. Note a real genuine desire for this other person to be free of suffering and to flourish. Now bring to mind this person you were recently comparing yourself to, while staying in touch with your compassionate feelings and intentions. Keep these alive and direct these feelings of compassion toward this person. With this person in mind, and these compassionate intentions within you, imagine saying: “May you be well”, “May you be happy”, and “May you be free from suffering.”

Competition Condition. Participants assigned to practice this self-help strategy were introduced to a rationale suggesting that they could minimize any feelings of inadequacy from their recalled appearance comparison by thinking of ways in which they might be superior to the comparison target. They were then introduced to the strategy of generating characteristics, abilities, or accomplishments they possessed to a greater degree than their comparison target. The presentation and phrasing of this strategy were based on previous research using favourable comparisons in non-appearance domains to alleviate the adverse effects of unfavourable appearance comparisons to media-based thin-ideal representations (Lew et al., 2007). In the main component of this condition, participants were taught to focus their attention on non-appearance domains in which they believed themselves to be superior to their comparison target:

“...we want you to identify various other domains outside of appearance (e.g., intelligence, work ethic, athletic accomplishments, academic or career accomplishments, quality of life, social relationships, etc.) in which you are better than this person. ... Really get in touch with the part of yourself that knows you are better than other people in certain ways – the part of you that is proud of your talents and successes.”

To facilitate the adoption of this mindset, participants were asked to recall aspects of self, their life, and their achievements in which they felt superior to others, or else simply in which they took pride or which they valued. They were encouraged to bring these intentions and feelings of mastery and competition to mind:

“To help you get into this mindset, you might try to recall a time when you were more successful than others; for example, a time when you got a highly desired co-op job or got a higher mark on a test than your friends. Or simply think of things about yourself and your life that you value and pride yourself on, for example your ability to form deep friendships.”

They were then asked to redirect these intentions and feelings to the target of their recalled comparison:

“Now tell yourself the various ways in which you might be better than this person. For example, “I think I’m better than her at forming lasting friendships” or “I have gotten better co-op jobs than her” or “People think I’m more genuine than her.” Try to think of personally-relevant comparisons you can make with this person where you believe you are better.”

Control Condition. Participants assigned to practice this self-help strategy were introduced to a rationale that discussed the tactic of using mental strategies as a distraction from continuing to make comparisons, and its benefits. They were then familiarized with the strategy

of mentally distracting oneself as a “short-term time-out” to interrupt ongoing negative and/or stressful states of mind. In the main component of this condition, participants were asked to count backwards in threes from 50, concentrating on their accuracy and an even pace:

“In this distraction task, we would like you to focus on counting backwards in threes from 50 and then continuing on with your day....The goal here is to prioritize getting the numbers right and keeping an even pace.”

Results

Analytic Strategy

All analyses were conducted in SAS 9.4 (SAS Institute, 2012). In order to test whether the Caregiving condition benefitted participants over and above the other conditions, a repeated measures ANOVA was conducted with the following dependent variables: participants’ feelings of body dissatisfaction, distress, feelings of threat, pride, peacefulness, and their motivation to make appearance comparisons. These primary analyses included the intervention condition as a between-subjects factor with three levels (Caregiving, Competition, Control), and Time as a within-subjects factor with two levels (Time 1 or pre-intervention and Time 2 or post-intervention). For all effects, Rosnow and Rosenthal’s (1996) formula of $r = [F/(F + df)]^{1/2}$ was used to compute effect size; interpretation was consistent with Cohen’s (1988) guidelines whereby $r = .10$ constitutes a small effect, $r = .30$ constitutes a medium effect, and $r = .50$ constitutes a large effect.

For analyses that yielded a significant Condition x Time effect, 1-df contrasts were used to test three planned comparison hypotheses: (1) Caregiving vs. Competition condition; (2) Competition vs. Control condition; and the (3) Caregiving vs. Control condition.

Finally, multiple regression analyses were conducted to test whether trait social comparison orientation at baseline moderated the impact of condition on the dependent variables at Time 2. Condition, social comparison orientation, and the interaction between the two were entered as simultaneous predictors.

Preliminary Analyses

Pearson zero-order correlations were conducted between all dependent variables at baseline (pre-recall). Because motivation to make appearance comparisons was not assessed at this timepoint, this variable was not included. Pearson correlations indicated that body dissatisfaction had a strong negative correlation with pride, $r = -.55, p < .001$, a moderate negative correlation with peacefulness, $r = -.35, p < .001$, and weak positive correlations with distress, $r = .24, p = .007$, and feelings of threat, $r = .20, p = .03$. Distress had a moderate negative correlation with pride, $r = -.30, p = .001$, and peacefulness, $r = -.37, p < .001$, and a moderate positive correlation with feelings of threat, $r = .43, p < .001$. Feelings of threat shared a weak negative correlation with peacefulness, $r = -.26, p = .004$. Finally, pride shared a strong positive correlation with peacefulness, $r = .54, p < .001$.

Next, a series of ANOVAs were conducted to ensure that random assignment was successful in preventing baseline differences across conditions. No baseline differences across conditions were found for any dependent variables.

Manipulation Checks

Before testing our primary hypotheses, repeated measures ANOVAs were conducted on manipulation check items. The aim was to determine whether feelings of compassion,

competitiveness, and distraction increased most over the course of practicing the Caregiving, Competition, and Control strategies respectively.

There was a significant effect of Time on compassion, $F(1, 126) = 37.02, p < .001$, effect size $r = .48$, with participants across conditions reporting an increase in compassion felt toward the target over the course of the intervention. Condition and Time interacted to significantly predict compassion, $F(2, 126) = 8.84, p < .001$, effect size $r = .26$, suggesting that condition impacted the change in compassion that participants experienced over course of the intervention period. Planned comparisons showed two significant contrasts supporting the manipulation: the Caregiving condition led to larger increases in compassion than the Competition, $F(1, 126) = 16.94, p < .001$, effect size $r = .34$, and Control conditions, $F(1, 126) = 7.86, p < .01$, effect size $r = .24$.

There was a significant effect of Time on feelings of competitiveness, $F(1, 120) = 44.80, p < .001$, effect size $r = .52$, with participants across conditions experiencing a decrease in competitiveness toward the target over the course of the intervention. Condition and Time interacted to significantly predict competitiveness, $F(2, 120) = 13.08, p < .001$, effect size $r = .31$. Planned comparisons showed three significant contrasts in line with what would be expected from the manipulation: the Caregiving condition led to larger decreases in competitiveness than the Competition, $F(1, 120) = 26.15, p < .001$, effect size $r = .42$, and Control conditions, $F(1, 120) = 6.90, p < .01$, effect size $r = .23$. The Control condition also led to larger decreases in competitiveness than the Competition condition, $F(1, 120) = 5.97, p = .02$, effect size $r = .22$.

There was a significant effect of Time on feelings of distraction, $F(1, 123) = 19.90, p < .001$, effect size $r = .37$, with participants across conditions experiencing a decrease in distraction from the feelings of the comparison over the course of the intervention. No significant

interaction between Condition and Time was found, $F(2, 123) = 0.94$, $p = .39$, effect size $r = .09$, indicating that the condition participants were assigned to did not influence the change in feelings of distraction experienced over the course of the intervention.

Central Analyses

Body Dissatisfaction

There was a significant effect of Time on body dissatisfaction, $F(1, 127) = 114.69$, $p < .001$, effect size $r = .69$, with participants across conditions experiencing a decrease in body dissatisfaction over the course of practicing their strategy. Condition and Time interacted to significantly predict body dissatisfaction, $F(2, 127) = 4.01$, $p = .02$, effect size $r = .17$. Planned comparisons showed two significant contrasts partially supporting hypotheses: the Control condition led to smaller reductions in body dissatisfaction than the Caregiving condition, $F(1, 127) = 5.94$, $p = .02$, effect size $r = .21$, and the Competition condition, $F(1, 127) = 6.17$, $p = .01$, effect size $r = .22$. There was no significant difference found between the Caregiving and Competition conditions, $F(1, 127) = 0.00$, $p = .98$, effect size $r = .00$.

Appearance Comparison Motivation

There was a significant effect of Time on appearance comparison motivation, $F(1, 125) = 73.17$, $p < .001$, effect size $r = .61$, whereby across conditions, participants experienced a decrease in their motivation to make appearance comparisons over the course of the intervention. Condition and Time interacted to significantly predict comparison motivation, $F(2, 125) = 11.00$, $p < .001$, effect size $r = .28$. Planned comparisons showed that the Caregiving condition decreased appearance comparison motivation significantly more so than the Competition, $F(1, 125) = 22.00$, $p < .001$, effect size $r = .39$, and Control conditions, $F(1, 125) = 5.46$, $p = .02$,

effect size $r = .20$. Furthermore, the Control condition also reduced appearance comparison motivation significantly more so than the Competition condition, $F(1, 125) = 5.23, p = .02$, effect size $r = .20$.

Peacefulness

There was a significant effect of Time on peacefulness, $F(1, 123) = 96.92, p < .001$, effect size $r = .66$, whereby across conditions, participants experienced an increase in their sense of peacefulness over the course of the intervention. Condition and Time interacted to significantly predict peacefulness, $F(2, 123) = 3.55, p = .03$, effect size $r = .17$. Planned comparisons showed that the Caregiving condition increased peacefulness significantly more so than the Control, $F(1, 123) = 6.37, p = .01$, effect size $r = .22$, and Competition conditions, $F(1, 123) = 4.15, p = .04$, effect size $r = .18$. There was no significant difference between the Competition and Control conditions, $F(1, 123) = 0.33, p = .57$, effect size $r = .05$.

Pride

There was a significant effect of Time on pride, $F(1, 116) = 94.57, p < .001$, effect size $r = .67$, whereby across conditions, participants experienced an increase in their feelings of pride over the course of the intervention. Condition and Time interacted to significantly predict pride, $F(2, 116) = 11.71, p < .001$, effect size $r = .30$. Contrasts showed that the Caregiving condition increased pride significantly more so than the Control condition, $F(1, 116) = 10.22, p < .002$, effect size $r = .28$. The Competition condition also increased pride significantly more so than the Control condition, $F(1, 116) = 22.57, p < .001$, effect size $r = .40$. There was no significant difference found between the Competition and Caregiving conditions, $F(1, 116) = 2.14, p = .15$, effect size $r = .13$.

Distress

There was a significant effect of Time on distress, $F(1, 114) = 68.77, p < .001$, effect size $r = .61$, whereby across conditions, participants experienced a decrease in distress over the course of the intervention. Condition and Time interacted to significantly predict distress, $F(2, 114) = 7.30, p = .001$, effect size $r = .25$. Planned comparisons showed that the Caregiving condition decreased distress significantly more so than the Competition, $F(1, 114) = 9.77, p = .002$, effect size $r = .28$, and Control conditions, $F(1, 114) = 12.38, p < .001$, effect size $r = .31$. No significant difference was found between the Competition and Control conditions, $F(1, 114) = 0.22, p = .64$, effect size $r = .04$.

Feelings of Threat

There was a significant effect of Time on how threatened participants reported feeling, $F(1, 110) = 48.19, p < .001$, effect size $r = .55$, whereby across conditions, participants reported feeling less threatened over the course of the intervention. No significant interaction between Condition and Time was found, $F(2, 110) = 2.01, p = .14$, effect size $r = .13$, indicating that the condition participants were assigned to did not influence the change in threatened feelings experienced over the course of the intervention.

Secondary Analyses

Social Comparison Orientation as Moderator

Trait social comparison orientation did not significantly interact with condition to predict any of the dependent variables at Time 2, controlling for Time 1 scores. Therefore, contrary to hypotheses, this variable did not influence the impact of interventions on any of the outcomes considered in this study.

Discussion

This study was the first to my knowledge to investigate the momentary benefits of cultivating a caregiving, compassionate orientation toward the target of an unfavourable appearance comparison. In a one-hour in-lab session, participants were asked to recall a recent unfavourable appearance comparison and guided through the application of a randomly assigned intervention. The caregiving intervention of interest was compared to two other conditions, Competition (engaging in downward comparisons vis-à-vis the target) and Control (distracting oneself by counting).

While participants across conditions appeared to experience momentary improvements in affect, body dissatisfaction, and appearance comparison motivation from pre- to post-intervention, findings also partially supported the hypothesis that participants who practiced the caregiving intervention would see increased momentary benefits relative to the other two interventions. With regard to the affective variables of interest, relative to the other two interventions, participants who shifted to a caregiving mentality focused on cultivating feelings of compassion and well-wishes towards their comparison target reported greater increases in feelings of peacefulness and greater decreases in feelings of distress. The potential capacity of the caregiving mentality in the aftermath of an unfavourable appearance comparison to buffer distress and promote feelings of peace – a form of positive affect that theoretically maps onto the soothing system in Gilbert’s (2009) tripartite model of affect regulation – is a promising outcome. Participants in the Caregiving and Competition conditions also reported greater feelings of pride than those in the Control condition. While pride is a form of positive affect that is theoretically more closely linked to the drive system (Gilbert, 2009) and an emotion we would have anticipated to be elevated in the Competition condition relative to the Caregiving condition,

it is not entirely unsurprising that increases in feelings of pride were significantly more salient in our “active” conditions that involved actively working with the distressing comparison relative to our control condition which did not.

In contrast to my hypothesis that the Caregiving condition would be more beneficial than the other conditions to state body dissatisfaction, participants who practiced either the caregiving or competition interventions experienced greater reductions in body dissatisfaction relative to those who practiced the Control condition’s distraction intervention. The competition intervention’s relative success in reducing body dissatisfaction after an unfavourable appearance comparison is consistent with previous studies demonstrating the utility of favourable comparisons in non-appearance domains in buffering the negative outcomes of unfavourable appearance comparisons (e.g., Lew et al., 2007). Promisingly, however, the caregiving intervention appeared to be just as beneficial in doing the same; and in providing the aforementioned benefits to affect over and above the competition intervention, may ultimately be a more useful strategy for women to practice. Results nevertheless need to be replicated and thus we must be careful in recommending the caregiving approach over the competition approach until more research is done.

Participants in the Caregiving condition reported decreased state motivation to make appearance comparisons relative to those in the other conditions. This is an encouraging finding considering the vicious cycle driven by unfavourable appearance comparisons wherein women who make such comparisons continue to make them even while the practice makes them unhappier (Leahey et al., 2007). Although more research is needed, that participants would report even a momentary motivation to make a behavioural change that might allow them to

escape this cycle is suggestive of the potential impact that cultivating compassion may have in such a short time.

Surprisingly, the condition to which participants were assigned did not influence the change in how threatened they felt over the course of the intervention. This is an interesting finding, given that based on my theoretical formulation, I would have expected participants in the Caregiving condition to experience decreased threatened feelings relative to the other two conditions. However, participants across conditions experienced decreases in feelings of threat over the course of the intervention. One explanation for this could be the broad nature of the question: perhaps in the context of appearance comparisons, feelings of threat are harder for an individual to report on at the state level than if they were asked about these feelings over a longer period of time, or in a relational context (i.e., how threatened they feel by a certain person). It could be that simply responding to the feelings engendered by the unfavourable appearance comparison through engagement in any of the interventions to which participants were randomly assigned was sufficient to reduce feelings of threat and the nature of the practice itself is less important. Again, more research is needed.

Finally, trait social comparison orientation did not emerge as a moderator of any of the relationships between condition and the outcomes investigated in this study. While this is a departure from previous research, it may be that personality traits such as social comparison orientation are less relevant in the context of such a brief intervention focused on momentary effects. Perhaps the moderating effect of social comparison orientation only becomes evident over a longer period of investigation. In future research, I hope to further explore the influence of this important trait on the practice of making appearance comparisons and their outcomes.

Theoretical and Practical Implications

In line with previous research, this present study supports the value of applying social mentality theory to understand and develop interventions for harmful appearance comparisons. Notably, this study also adds to the burgeoning literature on the benefits of compassion for physical and psychological health, with findings being the first to suggest that cultivating feelings of compassion and well-wishes towards the people they might unfavourably compare themselves to can have immediate benefits on college women's feelings about their body and more broadly, their emotional state. Furthermore, such a shift in mentality can also reduce their motivation to make these unfavourable comparisons that bring them such pain. This pattern of results is made even more noteworthy by the study's vehicle of a relatively brief intervention manipulating an outward interpersonal orientation and in turn being able to shift, even momentarily, complex internally-driven processes such as affect, body dissatisfaction, and comparison motivation.

Limitations and Future Directions

This study had several limitations that I hope to address in future research. Firstly, we had a relatively small and homogeneous sample; our participants were largely young college-age students. Future work will need to broaden the generalizability of the present findings by investigating the efficacy of shifting to a mindset focused on cultivating compassion and care among older populations recruited from more community-based settings. Secondly, we relied entirely on self-report measures in this study, which could have led to self-presentation concerns. These were also unvalidated single-item VAS measures, and although these have been used successfully in previous research in this field (e.g., Cattarin et al., 2000), and are valuable in brief state-level investigations such as this one, my reliance on solely this type of measure detracts

somewhat from the psychometric strength of this study. Future work will include validated measures, as well as more objective measures such as behavioural and/or implicit measures in my study design to address such concerns. Thirdly, this investigation occurred within the context of a recalled appearance comparison. Participants may have had difficulties recalling a recent appearance comparison, which in turn may have limited their ability to apply their assigned intervention. Furthermore, it is unclear whether the effects of the intervention would be the same for a recalled and current comparison. In future research, it would be useful to study the interventions as applied to a live comparison to replicate and strengthen my findings; this will also bolster the external validity of such an intervention. Finally, this study was conducted over a relatively short-term period of 30 minutes. In future studies, it would be interesting to see if these momentary benefits replicate with repeated practice over a longer study period.

Conclusion

This study was the first to establish the momentary benefits of adopting a caregiving mindset towards those with whom one has made unfavourable comparisons. Findings suggest that relative to a cognitive distraction strategy, the strategy of making favourable comparisons in non-appearance domains is at least briefly effective in reducing body dissatisfaction resulting from unfavourable appearance comparisons, and in increasing feelings of pride. However, if replicated, the present findings would suggest that cultivating compassion and well-wishes towards those women may initially perceive as competitors may be beneficial to affect and in reducing the motivation to make further appearance comparisons than the favourable comparison strategy.

Study 2

In Study 1, participants relied on their memory of a recent unfavourable appearance comparison: this limited control of variables such as the time that had passed since the comparison was made, and recall accuracy. Additionally, participants may have since processed or reframed their thoughts and emotions related to the comparison as a form of coping with it. Further questions then arise: what are the momentary effects of cultivating care and compassion toward targets following a live comparison, and how do these compare with those of making downward comparisons towards targets?

In Study 2 of my dissertation, I therefore sought to examine the momentary effects of the caregiving and competition interventions in an even more ‘real-time’ context. Specifically, participants were asked to select a comparison target and make a live unfavourable appearance comparison to someone they knew on Instagram, a platform on which appearance comparisons frequently occur. They were subsequently guided through either cultivating care and compassion towards the target or making downward comparisons towards the target. Given increasing concern about the detrimental effect of social media images on our body-related and affective well-being, and the mounting evidence that this effect is mediated by appearance comparisons (Brown & Tiggemann, 2016; Fardouly et al., 2017), examining ways to intervene with this real-world problem has the potential to provide valuable insights. In Study 2, I also broadened the scope of my outcomes of interest, extending the examination of the relative impact of the caregiving intervention on participants’ self-compassion and social safeness given my theory that cultivating compassion toward others may positively influence one’s capacity to feel compassionate toward oneself and one’s sense of connectedness to others. I continued to explore the role of trait social comparison orientation as a moderator of the interventions’ effect on

outcomes. Finally, to broaden the scope of my dependent variables beyond self-report, I also developed and used a behavioural task to assess appearance comparison motivation.

Background

As social media usage continues to grow worldwide, so too has concern about its potentially negative impact. One significant concern associated with the use of social media is its effect on body image. Studies have found that young women who use Facebook report engaging in more appearance concerns and dieting behaviour than non-users (Tiggemann & Slater, 2013, 2014). More frequent social networking site (SNS) use among high school students predicts increased body dissatisfaction and appearance-related conversations with peers 18 months later (de Vries et al., 2016). Furthermore, higher engagement with SNSs – which has been measured in several ways including time spent, frequency of checking accounts, or the number of friends/followers – is associated with increased levels of body dissatisfaction, drive for thinness, and dieting (Fardouly & Vartanian, 2015; Kim & Chock, 2015; Mabe et al., 2014; Tiggemann & Slater, 2013).

Another emerging consideration is how the type of content users view on SNSs affects body image outcomes. Higher exposure to photos on Facebook (Meier & Gray, 2014) or appearance-oriented or ‘fitspiration’ (a portmanteau of ‘fitness’ and ‘inspiration’) images on Instagram (Brown & Tiggemann, 2016; Cohen et al., 2017; Fardouly et al., 2018), as well as the act of sharing selfies on SNSs, have all been linked to poorer body image outcomes. These findings suggest that while SNS usage is generally harmful, appearance-focused use may be especially toxic to body image.

Appearance Comparisons on Social Media

What is it about appearance-oriented SNS use that makes it especially deleterious to body image? Historically, the harmful effects of exposure to appearance or thin-ideal oriented media on body image have been ascribed to the practice of making appearance-focused social comparisons (Levine & Murnen, 2009; Want, 2009). Indeed, numerous studies have consistently identified appearance comparisons as a behavioural mediator of the relationship between SNS usage and body dissatisfaction. In one study, a positive association between Facebook usage and body image concerns among undergraduate women was mediated by their self-reported tendency to compare their appearance to others on Facebook (Fardouly & Vartanian, 2015). In another, the tendency to make appearance comparisons mediated the relationship between social grooming behaviours, such as viewing and commenting on profiles on Facebook, and the drive for thinness (Kim & Chock, 2015). Brown and Tiggemann (2016) also found that participants who were exposed to celebrity and attractive peer images reported increased negative mood and body dissatisfaction relative to those exposed to travel images due to the greater frequency of state appearance comparisons the former images elicited. Finally, Fardouly and colleagues (2018) determined that the general tendency to make appearance comparisons, as well as the tendency to make appearance comparisons to fitspiration images, mediated the relationship between more frequent viewing of fitspiration images on Instagram and body image concerns.

With the high volume of images being posted – Instagram alone is estimated to have 995 photos uploaded per second (Aslam, 2021) – SNSs present a new frontier on which the harmful practice of appearance comparisons can become even more ubiquitous than before. Not only are these platforms rich with source material for appearance comparisons, they are also designed in a way that allows users to consume images – and consequently, make these comparisons –

efficiently. This is especially true of Instagram, which is photo-based and designed to be navigated by scrolling quickly through images. The ease with which appearance comparisons can be made on SNSs, although applicable to both men and women, is especially concerning for women given that they are most vulnerable to appearance comparisons (Murnen & Smolak, 2015). As SNSs emerge as a consistent source of body dissatisfaction via appearance comparisons, so too does the need for intervention on these platforms.

Study Objectives

In this next stage of my dissertation, I sought to replicate findings from Study 1 which showed that among undergraduate student women, cultivating a caregiving orientation toward a recalled unfavourable comparison target yielded similar and in some cases greater momentary benefits than generating downward comparisons to the target in non-appearance domains. I also sought to extend these findings in crucial ways. Specifically, Study 2 aimed to explore the momentary effects of adopting a caregiving mentality: 1) in the context of a live ‘real-time’ rather than recalled appearance comparison; 2) in a social media setting; 3) among a more broadly representative sample, that is, including community participants; and 4) with the addition of validated measures and a behavioural task to more diversely measure outcomes.

Importantly, the present study sought to examine the effects of cultivating a caregiving mentality toward comparison targets in the context of live ‘real-time’ appearance comparisons on social media. While Study 1 demonstrated the momentary benefits of this shift in the context of a recalled appearance comparison, relying on participants’ memory to generate this comparison limited the control of variables such as the temporal distance of the comparison, or recall accuracy. Participants could also have processed or reframed their reactions to the recalled

comparison since it was made. These limitations may have interfered with participants' ability to successfully apply their assigned intervention and/or with the effects of the intervention.

Assuming participants are most negatively affected by an appearance comparison in the immediate aftermath of making it, it would be important to demonstrate that the caregiving intervention is beneficial to participants' affective and body-specific well-being in the context of a live comparison. The ubiquity of appearance comparisons on social media made this an ideal setting for investigating live 'real-time' appearance comparisons. Given that appearance comparisons on social media occur in a much faster-paced and more efficient manner than they might in other contexts, such as in person, this would also serve as a novel and valuable test of the effects of cultivating compassion toward attractive comparison targets, and one with important practical real-world applications. The social media setting would also allow for an entirely online administration of Study 2, which would in turn facilitate the recruitment of a more representative sample that could help broaden the generalizability of Study 1's findings.

Thus, Study 2 first sought to determine whether in the immediate aftermath of a live unfavourable appearance comparison on social media, the adoption of a caregiving mentality vis-à-vis the comparison target might be more beneficial than remaining in a competitive mentality and engaging in favourable comparisons vis-à-vis the target. The same intervention conditions from Study 1 were used in Study 2. As with Study 1, I was interested in whether a shift to the caregiving mentality would have in-the-moment benefits for participants' affective and body-specific well-being, and subsequently make them less motivated to make more comparisons. It was again hypothesized that participants who practiced this caregiving strategy in response to a live unfavourable appearance comparison would benefit more than those who practiced the competition or control interventions. Specifically, I hypothesized that they would experience

greater increases in forms of positive affect, greater decreases in forms of negative affect, greater decreases in body dissatisfaction, and greater decreases in the motivation to make comparisons.

Furthermore, inspired by Study 1 findings, I sought to better understand the nuances of how the caregiving and competitive mentalities map on to different forms of positive affect on the basis of Gilbert's (2009) tripartite model affect regulation. Because the caregiving mentality is thought to stimulate the soothing system, which is characterized by low-arousal forms of positive affect that signal safeness (Gilbert, 2009), I hypothesized that those who practiced the caregiving intervention would experience greater increases in feelings of peacefulness than those who practiced either of the other two intervention. Similarly, because the competitive mentality is thought to most directly active the drive/rewards system, characterized by high-arousal, energized forms of positive affect (Gilbert, 2009), I hypothesized that those who practiced the competition intervention would experience greater increases in feelings of pride than those who practiced either of the other two interventions.

Second, in aiming to extend the exploration of the caregiving mentality and its benefits in intervening with appearance comparisons, Study 2 sought to examine the relative impact of the caregiving, competitive, and distraction-based control interventions on participants' relationship with a) others and b) themselves. This objective was drawn from the theoretical underpinnings of the caregiving mentality, which suggest that it is fundamentally an orientation that evolved to orient us to connect with and care for others that we can now also enact toward ourselves (Gilbert, 2009). Thus, in addition to the affective and body-specific benefits it may provide, a shift to the caregiving mentality could make women feel more social safeness – that is, safer, warmer, more connected, and therefore less threatened in their broader social environments (Gilbert, 2005). Furthermore, the compassion that is cultivated in adopting a caregiving

mentality may promote self-compassion (Breines & Chen, 2013; Gu et al., 2020; Hermanto & Zuroff, 2016; Neff & Pommier, 2013), a form of self-to-self relating in which one attends to and seeks to alleviate and prevent one's own distress (Gilbert, 2005). Specifically, it was hypothesized that relative to participants who would practice the competition or distraction-based control interventions, those who would practice the caregiving intervention would experience increased social safeness and self-compassion.

Third, Study 2 sought to continue the exploration of trait social comparison orientation as a moderator of the effect of the two interventions on outcomes. Although there was no evidence for this relationship from Study 1, replication of this null finding could be informative. Furthermore, the contextual changes and Study 1 limitations addressed in Study 2 could facilitate this exploration. Consequently, it was again hypothesized that those higher in social comparison orientation would benefit most from shifting to the caregiving mentality.

Finally, Study 2 sought to address a major methodological limitation identified in Study 1 regarding its reliance on visual analog scales (VASs) to measure outcomes. Although VASs are valuable in brief state-level investigations and have been successfully used in previous research in body dissatisfaction (e.g., Cattarin et al., 2000), the addition of validated measures to assess outcomes would add to the psychometric strength of this program of research. Furthermore, the use of a more objective measure such as a behavioural task would reduce reliance on self-report measures. Consequently, in addition to the use of VASs, Study 2 incorporated both validated measures and a behavioural task: the former to assess state body dissatisfaction, self-compassion, and social safeness; the latter to assess appearance comparison behaviour on an exploratory basis.

Study Hypotheses

1. The caregiving intervention will be more beneficial than the competition and control interventions to participants' momentary affective and body-specific well-being and comparison motivation.
2. Specifically, the caregiving intervention will be more impactful than the competition and control interventions in boosting participants' feelings of peace; however, the competition intervention will be more impactful than the caregiving and control interventions in boosting participants' feelings of pride.
3. The caregiving intervention will be more beneficial than the competition and control interventions to participants' state self-compassion and state social safeness.
4. Social comparison orientation will moderate the effect of condition on outcomes, such that those with high trait social comparison orientation assigned to practice the caregiving intervention will benefit most in terms of momentary affective and body-specific well-being, comparison motivation, state self-compassion, and state social safeness.
5. The caregiving intervention will be more beneficial than the competition and control interventions to participants' subsequent engagement in appearance comparison behaviour.

Methods

Participants

An all-women sample was recruited from two different sources: from the community via Amazon's Mechanical Turk (MTurk), an online crowdsourcing platform, and via SONA, an online university research participant pool. Recruitment materials explicitly advertised the study as one for "Strategies to Help when Making Appearance Comparisons on Instagram" and

maintained relative transparency about what it entailed. To be eligible, participants were required to endorse 1) making frequent appearance comparisons to other women on social media, and 2) having a personal Instagram account they could access during the study. The former eligibility criterion was included based on previous work suggesting that women who more frequently engage in appearance comparisons are more vulnerable to their harms (Myers & Crowther, 2009) and therefore may stand to gain most from learning an intervention that targets such comparisons (Vimalakanthan et al., 2018). This latter eligibility criterion held constant the social media context in which women would be making an appearance comparison. Having women use their own account was also advantageously more naturalistic than, for example, a falsely constructed Instagram account. MTurk community participants who completed the entire study received \$2.50; SONA student participants received one credit that would be allocated towards their bonus psychology course marks.

Community Recruitment

Of the 729 individuals who signed up for this study via MTurk, 1 respondent was excluded because she did not consent to proceed with the study. A substantial 344 respondents were excluded due to ineligibility: 306 respondents denied identification as a woman, 25 respondents denied making frequent appearance comparisons, and 13 respondents denied having a personal Instagram account. In response to the issue of possible data contamination on MTurk, we also checked geographical metadata and reviewed responses to a qualitative manipulation check, ultimately identifying and excluding 175 respondents as fraudulent (i.e., bots or scripts). Finally, 87 respondents were excluded for incomplete study participation: 11 respondents did not start the study at all, despite meeting all eligibility criteria and consenting to proceed with the study; 37 respondents dropped out before being randomly assigned to a strategy; and another 39

respondents dropped out after being assigned to a strategy, but prior to completing this portion of the study. Of these 39 participants, 13 were in the Caregiving condition, 15 were in the Competition condition, and 11 were in the Control condition. Attrition rates were not significantly different between conditions, $X^2 = 0.92, p = .63$. Of the 122 participants who completed the entire study, we excluded 12 participants who failed more than one of the five attention-check items inserted in our questionnaires.

Student Recruitment

Of the 198 participants who completed the study, we excluded 16 participants who failed more than one of the five attention-check items inserted in our questionnaires.

Final Sample

The final sample consisted of 292 women of whom 94 were in the Caregiving condition, 93 in the Competition condition, and 105 in the Control condition. The mean age was 24.0 ($SD = 7.89$). Ethnic composition was as follows: 57.2% White/Caucasian, 13.7% South Asian, 11.0% East Asian, 4.8% Hispanic, 4.5% Black/African, 3.1% Southeast Asian, 2.4% Middle Eastern, 1.0% West Indian/Caribbean, and 0.7% Indigenous. Approximately 0.7% of participants endorsed an ethnicity not listed, and 1.0% of participants declined to answer this question.

Measures

Moderating Variables

Participants completed the following measure as part of a set of questionnaires at the start of the study.

Social Comparison Orientation. The 11-item Iowa-Netherlands Scale for Social Comparison Orientation (INCOM; Gibbons & Buunk, 1999) measured participants' propensity for comparing themselves with others. Those higher in social comparison orientation as measured by the INCOM make more social comparisons than those lower on the scale (Gibbons & Buunk, 1999). Items (e.g., "If I want to find out how well I have done something, I compare what I have done with how others have done") are rated on a 5-point Likert scale ranging from 1 (*I disagree strongly*) to 5 (*I agree strongly*). Cronbach's alpha in the present sample was .76, indicating adequate internal consistency.

Dependent Variables

Dependent variables were measured using a mix of visual analog scales, validated measures, and a behavioural task.

Visual Analog Scales. The same visual analog scales (VASs) as Study 1 were used to measure most dependent variables. Participants completed VASs on body dissatisfaction, motivation to make more appearance comparisons, self-compassion, distress, feelings of threat, feelings of pride, and feelings of peacefulness. Additionally, we added the following VAS items: motivation to make social comparisons, connectedness to comparison target, and connectedness to others. The former item allowed us to investigate participant motivation to make social comparisons beyond the domain of appearance, and the latter two items acted as analogs of social safeness. Items were presented with the question next to a slider that participants could move to set their position on a scale anchored at labels corresponding to 0 and 100: for example, the question "RIGHT NOW, how do you feel about your body?" allowed participants to choose a position along the scale between Extremely Dissatisfied (0) and Extremely Satisfied (100). VASs were completed at three different time points: 1) baseline (before live comparison and

intervention); 2) after making the comparison but pre-intervention; and 3) post-intervention. The VAS measuring connectedness to the comparison target was only completed at these latter two points as there was no comparison target at baseline.

Manipulation Checks. VASs were also used to perform manipulation checks throughout the study. Across conditions, participants were asked to complete three different items representing the essence of each condition: 1) how compassionate they felt towards the target of their comparison; 2) how competitive they felt towards the target of their comparison; and 3) how distracted they felt from the comparison. Participants completed these items at two different timepoints: 1) after making the comparison but pre-intervention; and 2) post-intervention.

Validated Measures.

State Body Image. The 6-item Body Image States Scale (BISS; Cash et al., 2002) measures participants' momentary body image. For each item, participants are asked to select one statement out of nine possible options that best describes how they feel "right now at this very moment." For example, on Item 3, participants can select a statement indicating that they feel anywhere from "extremely dissatisfied" to "extremely satisfied" with their weight. The BISS has been found to have good convergent and construct validity (Cash et al., 2002). The scale had a Cronbach's alpha of .83 in the current sample, indicating good internal consistency.

Self-Compassion. The 12-item short-form of the Self-Compassion Scale (SCS-SF; Raes, Pommier et al., 2011) measured participants' tendency to feel compassion towards themselves in the face of distress or disappointment – for example, how kindly and non-judgmentally they may treat themselves. Items (e.g., "I try to see my failings as part of the human condition") are rated on a 5-point Likert-type scale ranging from 1 (*Never*) to 5 (*Always*). Instructions and wording

were slightly modified to orient participants to the present moment. The SCS-SF is a highly reliable and valid alternative to the long-form SCS, especially when looking at overall self-compassion scores as in the current study (Raes et al., 2011). Internal consistency in the present sample was strong, with a Cronbach's alpha of .89.

Social Safeness. The 11-item Social Safeness and Pleasure Scale (SSPS; Gilbert et al., 2009) measured the extent to which participants experience their social environment as safe, warm, and soothing. Items (e.g., "I feel secure and wanted") are rated on a 5-point Likert-type scale ranging from 0 (*Almost never*) to 4 (*Almost all the time*). Instructions were slightly modified to orient participants to the present moment. The SSPS has been found to have strong construct and discriminant validity and to demonstrate a high degree of reliability (Gilbert et al., 2009; Kelly et al., 2012). The scale had a Cronbach's alpha of .95 in the present sample, indicating excellent internal consistency.

Behavioural Task. Appearance comparison behaviour was additionally assessed through the administration of a behavioural task developed specifically for this study. As described in further detail below, the task involved having participants review various photos which contained images that either invited appearance comparisons or did not; the relative time spent viewing the appearance-focused images was considered an indicator of participants attending to the images in order to make appearance comparisons.

Task Design. Images were recruited from the personal Instagram profiles of consenting non-participating women volunteers (N = 6). Images were specifically selected to fulfill one of two categories – appearance comparison-oriented or non-appearance comparison oriented – with volunteers providing at least one image fitting each of the categories. Comparison-oriented images were those that focused on or emphasized the body/appearance of the woman in the

picture, while non-comparison-oriented images contained a woman in the picture but obscured her body/appearance or was clearly focused on another element (i.e., the landscape). An initial pool of 14 images were screened by a pilot group of consenting non-participating women volunteers (N = 13) that viewed and categorized each image as comparison-oriented or non-comparison-oriented based on their personal perspective. The group was also asked to elaborate on how they decided on their responses to guide the categorization of images. Feedback from this screening procedure was used to narrow the pool to 10 images, evenly split between comparison-oriented or non-comparison-oriented, and paired such that the same woman was featured in one image of each category.

Task Implementation. Participants in this study were asked (under conditions of mild deception; see description in Procedure) to view these 10 images. The order of images were randomized for each participant. The time participants spent viewing each picture was recorded through Qualtrics without participants' awareness (until they were debriefed). The relative time participants spent viewing comparison-oriented vs. non-comparison-oriented images was used as a proxy measure of appearance comparison behaviour; that is, the longer participants spent viewing an image, the more likely they were to be making an appearance comparison to the comparison target in the image. Research has long used viewing time as an indicator of one's preferences or behaviours, whereby increased viewing times reflect greater interest in or engagement with the presented stimuli (Fischer, 2000; Johnston, 1998). Participants were also explicitly asked to indicate (i.e., respond yes or no) whether or not they had made an appearance comparison for each image.

Procedure

This study was conducted entirely in one online session lasting no longer than 60 minutes. Upon recruitment, participants were directed to a Qualtrics survey in which the Information-Consent Letter was presented, and consent was obtained. Participants were also asked to provide demographic information and their weight and height at this time.

Questionnaires

Participants completed the abovementioned validated measures before and after the main study task, with the exception of the INCOM which was only administered beforehand, and the BISS, which was additionally administered after the live comparison but prior to participants' introduction to their randomly-assigned intervention. This order was determined with the consideration of minimizing participant burden: due to their length, it would have been onerous for participants to complete all of the validated measures again prior to the introduction of the intervention. This also ran the risk of interrupting the emotional experience of participants as they made the comparison and then intervened with it. Additionally, administering these measures again in such close proximity to the previous time point may have cued participants to come to know how they were expected to respond with respect to study outcomes. In order to balance these considerations with the importance of observing shifts in the dependent variables of interest throughout the main study task, single-item VASs were instead used. Most VAS items were administered at three different time points: 1) baseline (before live comparison and intervention); 2) after making the comparison but pre-intervention; and 3) post-intervention. Manipulation check VASs and the item assessing connectedness to the comparison target were administered only at the latter two time points.

Live Appearance Comparison

Participants listened to a series of audio clips with text accompaniment. The introductory portion of these clips discussed the prevalence of body dissatisfaction and the practice of appearance comparisons. Participants were then provided with an example of an Instagram-specific upward appearance comparison, such as seeing an image post of an old classmate who now looked much thinner than you.

Next, participants were instructed to scroll through their personal Instagram account and select an image from their feed posted by a woman that they personally knew with whom they compare their physical appearance frequently. We specified these criteria in order to keep the type of comparison target selected relatively constant across participants. Moreover, we felt it would be easier for participants to employ either strategy – whether they were cultivating compassion or generating non-appearance domains of superiority – towards someone they knew than someone they did not. Participants were then guided through making upward appearance comparison to their selected target.

Experimental Manipulation

Immediately after making their upward appearance comparison, participants were randomly assigned to one of three intervention conditions: the Caregiving, Competition, or Control conditions. These were modelled after those used in Study 1 but were modified slightly to reference the context of the social media platform. Participants assigned to the Caregiving condition were first introduced to the compassionate, caregiving mentality, then taught to shift away from perceiving the target of their appearance comparison as a competitor and instead as a fellow human being towards whom they could generate thoughts and feelings of care.

Specifically, participants were guided to recall a time they felt compassionate towards another person or animal, and then redirect that compassion to the target. Participants assigned to the Competition condition were taught to make downward (i.e., favourable) comparisons in non-appearance domains to their appearance comparison target. Specifically, participants were asked to focus their attention on characteristics, abilities, or accomplishments that made them feel superior compared to the target. Participants assigned to the Control condition were taught to distract themselves from the feelings of the comparison. Specifically, participants were asked to count backward in threes from 50, focusing on their accuracy and pacing.

Behavioural Task

This portion of the study was presented with mild deception. First, participants were informed that they had completed the study in its entirety and that the following task would assist the researchers with the development of a future study. Specifically, they were instructed to view a set of images one at a time and rate the quality of the images on their photographic features such as clarity and brightness. Participants were then presented with the 10 randomly ordered images selected for the behavioural task, as well as the rating scales for image quality. While they performed this task, the time they spent viewing each image was recorded without their awareness. After participants completed this task, they were explicitly asked whether they had made an appearance comparison to any of the images. Following the task, participants were debriefed and the true nature of the task was explained.

Results

Analytic Strategy

All analyses were conducted in SAS 9.4 (SAS Institute, 2012). In order to test whether the Caregiving condition benefitted participants more than the other conditions, repeated measures ANOVAs were conducted on the abovementioned dependent variables. These primary analyses included the intervention condition as a between-subjects factor with three levels (Caregiving, Competition, Control), and Time as a within-subjects factor with two levels (Time 1 or baseline/pre-intervention and Time 2 or post-intervention). Parallel analyses were initially conducted within each of our two samples (i.e., community participants, student participants) independently. Because findings were generally the same across samples, we opted to combine the two samples for parsimony and present results from this combined sample below. For analyses that yielded a significant Condition x Time effect, 1-df contrasts were used to test three planned comparison hypotheses: (1) Caregiving vs. Competition condition; (2) Competition vs. Control condition; and the (3) Caregiving vs. Control condition. Effect size correlations were calculated using Rosnow and Rosenthal's (1996) formula of $r = [F/(F + df)]^{1/2}$. Effect sizes were interpreted according to Cohen's (1988) guidelines, where $r = .10$ corresponds to a small effect, $r = .30$, a medium effect, and $r = .50$, a large effect.

Finally, multiple regression analyses were conducted to test whether trait social comparison orientation at baseline moderated the impact of condition on dependent variables at Time 2 controlling for Time 1 levels. Condition, social comparison orientation, and the interaction between the two were entered as simultaneous predictors.

Preliminary Analyses

Table 1.1 presents Pearson zero-order correlations conducted between dependent variables at baseline. Because connectedness to comparison target was not assessed at this timepoint, this variable was not included.

Body dissatisfaction scores on the BISS shared a large positive correlation with body dissatisfaction scores on the one-item VAS. Each of the body dissatisfaction variables shared a small positive correlation with distress; large negative correlations with VAS self-compassion and pride; and moderate negative correlations with SCS-SF self-compassion, social safeness, connectedness to others, and peace. Only BISS body dissatisfaction shared small positive correlations with appearance comparison motivation and social comparison motivation.

Similarly, self-compassion scores on the SCS-SF and self-compassion scores on the one-item VAS shared a large positive correlation. SCS-SF self-compassion shared a large positive correlation with social safeness, while this association was moderate for VAS self-compassion. VAS self-compassion shared large positive correlations with connectedness to others, pride, and peace, while these associations were moderate for SCS-SF self-compassion. SCS-SF self-compassion shared a moderate negative correlation with distress, while this association was small for VAS self-compassion. Only SCS-SF self-compassion shared small negative correlations with threatened feelings, appearance comparison motivation, and social comparison motivation.

Social safeness and connectedness to others shared a large positive correlation. Connectedness with others shared large positive correlations with pride and peace, while associations between social safeness and these emotion variables were moderate. Both social

safeness and connectedness to others also shared a small negative correlation with distress. Only social safeness shared small negative correlations with threatened feelings, appearance comparison motivation, and social comparison motivation.

Distress shared a moderate positive correlation with threatened feelings, small positive correlations with appearance comparison motivation and social comparison motivation, a moderate negative correlation with peace, and a small negative correlation with pride. Threatened feelings shared small positive correlations with appearance comparison motivation and social comparison motivation. Pride and peace shared a large positive correlation. Finally, appearance comparison motivation shared a large positive correlation with social comparison motivation.

Table 1.2 presents means and standard deviations for all dependent variables, by condition, both at baseline (except for connectedness to target, which was first measured pre-intervention) and post-intervention. A series of ANOVAs were also conducted to ensure that random assignment was successful. There were significant baseline differences across conditions for state body dissatisfaction (as measured by the BISS), $F(2, 288) = 4.40, p = .01$, with contrasts showing that participants in the Caregiving condition reported significantly higher state body dissatisfaction than those in the Control condition, $F(1, 288) = 8.78, p = .003$. Similarly, there were significant baseline differences across conditions for VAS body dissatisfaction, $F(2, 285) = 5.76, p = .004$, with contrasts showing that participants in both the Caregiving, $F(1, 285) = 10.74, p = .001$, and Competition conditions, $F(1, 285) = 5.33, p = .02$, reported higher state body dissatisfaction than those in the Control condition. Finally, there were significant baseline differences across conditions for feelings of pride, $F(2, 272) = 7.99, p < .001$, with contrasts showing that participants in both the Caregiving, $F(1, 272) = 15.69, p < .001$, and Competition

conditions, $F(1, 272) = 5.28, p = .02$, reported lower feelings of pride than those in the Control condition. There was also a trend-level baseline difference across conditions for VAS self-compassion, $F(2, 283) = 2.78, p = .06$, with contrasts showing that participants in the Caregiving condition reported lower self-compassion than those in the Control condition, $F(1, 283) = 5.21, p = .02$. In sum, several baseline differences existed across conditions in the final sample despite random assignment, with participants in the Caregiving and Competition conditions appearing to be “worse off” on certain variables at the outset of the virtual session than those in the Control condition.

Manipulation Checks

Before testing our primary hypotheses, repeated measures ANOVAs were conducted on manipulation check items to determine whether self-reported compassion, competitiveness, and distraction increased most over the course of practicing the Caregiving, Competition, and Control strategies respectively.

There was a significant effect of Time on compassion, $F(1, 271) = 55.99, p < .001$, effect size $r = .41$, with participants across conditions reporting an increase in compassion felt toward the target over the course of the intervention. Condition and Time interacted to significantly predict compassion, $F(2, 271) = 8.19, p < .001$, effect size $r = .17$, suggesting that condition impacted the change in compassion that participants experienced over the course of the intervention period. Planned comparisons showed one significant and one trend-level contrast supporting the manipulation: the Caregiving condition led to larger increases in compassion than the Control, $F(1, 271) = 16.34, p < .001$, effect size $r = .24$, and Competition conditions, $F(1, 271) = 8.19, p < .001$, effect size $r = .17$. The Competition condition also led to larger increases in compassion than the Control conditions, $F(1, 271) = 4.51, p < .04$, effect size $r = .13$.

There was a significant effect of Time on feelings of competitiveness, $F(1, 275) = 44.48$, $p < .001$, effect size $r = .37$, with participants across conditions experiencing a decrease in competitiveness toward the target over the course of the intervention. Condition and Time interacted to significantly predict competitiveness, $F(2, 275) = 6.87$, $p = .001$, effect size $r = .16$. Planned comparisons showed two significant contrasts in line with what would be expected from the manipulation: the Caregiving condition led to larger decreases in competitiveness than the Competition, $F(1, 275) = 13.38$, $p < .001$, effect size $r = .22$, and Control conditions, $F(1, 275) = 5.84$, $p < .02$, effect size $r = .14$.

There was a significant effect of Time on feelings of distraction, $F(1, 270) = 14.27$, $p < .001$, effect size $r = .22$, with participants across conditions experiencing a decrease in distraction from the feelings of the comparison over the course of the intervention. Condition and Time interacted to significantly predict distraction, $F(1, 270) = 6.12$, $p = .003$, effect size $r = .15$. Planned comparisons showed two significant contrasts in line with what would be expected from the manipulation: both the Caregiving and Competition conditions led to larger decreases in distraction – $F(1, 270) = 9.42$, $p = .002$, effect size $r = .18$, and $F(1, 270) = 8.52$, $p = .004$, effect size $r = .17$, respectively – than the Control condition.

Central Analyses

Body Dissatisfaction

There was a significant effect of Time on state body dissatisfaction as captured by both the BISS, $F(1, 286) = 169.27$, $p < .001$, effect size $r = .61$, and the VAS, $F(1, 280) = 134.21$, $p < .001$, effect size $r = .57$, whereby across conditions, participants reported decreasing body dissatisfaction over the course of the intervention. No significant interaction between Condition

and Time was found for body dissatisfaction as captured by the BISS, $F(2, 286) = 2.14, p = .12$, effect size $r = .09$, or the VAS, $F(2, 280) = 2.41, p = .09$, effect size $r = .09$, indicating that the condition to which participants were assigned did not influence the change in state body dissatisfaction experienced over the course of the intervention.

Self-Compassion

There was a significant effect of Time on self-compassion as captured by the modified state SCS-SF, $F(1, 284) = 96.50, p < .001$, effect size $r = .50$, whereby across conditions, participants reported increasing self-compassion from baseline to post-intervention. Condition and Time interacted to significantly predict self-compassion with this measure, $F(2, 284) = 7.17, p < .001$, effect size $r = .16$. Planned comparisons revealed that, consistent with hypotheses, the Caregiving condition led to significantly greater increases in self-compassion than the Competition, $F(1, 284) = 9.49, p = .002$, effect size $r = .18$, and Control conditions, $F(1, 284) = 12.00, p < .001$, effect size $r = .20$. No significant difference was seen between the Competition and Control conditions, $F(1, 284) = 0.09, p = .76$, effect size $r = .02$.

Similarly, there was a significant effect of Time on self-compassion as captured by the self-compassion VAS item, $F(1, 272) = 117.78, p < .001$, effect size $r = .55$, whereby across conditions, participants reported increasing self-compassion over the course of the intervention. Condition and Time interacted to significantly predict self-compassion with this measure, $F(2, 272) = 6.83, p = .001$, effect size $r = .16$. Planned comparisons revealed that, consistent with hypotheses, the Caregiving condition led to significantly greater increases in self-compassion than the Control condition, $F(1, 272) = 13.61, p < .001$, effect size $r = .22$. However, contrary to hypotheses, a similar trend was observed between the Competition and Control conditions, $F(1,$

272) = 3.61, $p < .06$, effect size $r = .11$. There was no significant difference between the Caregiving and Competition conditions, $F(1, 272) = 2.92$, $p = .09$, effect size $r = .10$.

Social Safeness and Connectedness

Social Safeness. There was a significant effect of Time on social safeness as captured by the modified state SSPS, $F(1, 284) = 16.17$, $p < .001$, effect size $r = .23$, whereby across conditions, participants reported increasing social safeness from baseline to post-intervention. No significant interaction between Condition and Time was found, $F(2, 284) = 1.98$, $p = .14$, effect size $r = .08$, indicating that the condition to which participants were assigned did not influence the change in social safeness experienced over this period of time.

Connectedness to Others. Similarly, there was a significant effect of Time on feelings of connectedness to others as captured by the VAS item, $F(1, 278) = 33.09$, $p < .001$, effect size $r = .33$, whereby across conditions, participants reported increasing feelings of connectedness to others over the course of the intervention. Condition and Time interacted significantly to predict feelings of connectedness to others, $F(2, 278) = 6.01$, $p = .003$, effect size $r = .15$. Planned comparisons revealed that, consistent with hypotheses, the Caregiving condition led to greater increases in feelings of connectedness to others than the Control condition, $F(1, 278) = 8.17$, $p = .005$, effect size $r = .17$. However, so too did the Competition condition, $F(1, 278) = 9.39$, $p = .002$, effect size $r = .18$, contrary to hypotheses. There was no significant difference between the Caregiving and Competition conditions, $F(1, 278) = 0.04$, $p = .84$, effect size $r = .01$.

Connectedness to Target. Finally, there was a significant effect of Time on feelings of connectedness to the comparison target, $F(1, 266) = 53.40$, $p < .001$, effect size $r = .41$, whereby across conditions, participants reported increasing feelings of connectedness to their comparison

target over the course of the intervention. Condition and Time interacted significantly to predict feelings of connectedness to the comparison target, $F(2, 266) = 7.38, p < .001$, effect size $r = .16$. Planned comparisons revealed that, consistent with hypotheses, the Caregiving condition led to greater increases in feelings of connectedness to the comparison target than both the Competition, $F(1, 266) = 5.88, p = .02$, effect size $r = .15$, and Control conditions, $F(1, 266) = 14.44, p < .001$, effect size $r = .23$. There was no significant difference between the Competition and Control conditions, $F(1, 266) = 1.75, p = .19$, effect size $r = .08$.

Peacefulness

There was a significant effect of Time on peacefulness, $F(1, 272) = 97.97, p < .001$, effect size $r = .51$, whereby across conditions, participants reported increasing feelings of peacefulness over the course of the intervention. Condition and Time interacted significantly to predict peacefulness, $F(2, 272) = 3.27, p = .04$, effect size $r = .11$. Planned comparisons revealed that, consistent with hypotheses, the Caregiving condition led to significantly greater increases in feelings of peacefulness than the Control condition, $F(1, 272) = 5.59, p = .02$, effect size $r = .14$. However, contrary to hypotheses, a similar trend was observed with the Competition condition also leading to greater increases in feelings of peacefulness than the Control condition, $F(1, 272) = 3.85, p = .05$, effect size $r = .12$. There was no significant difference between the Caregiving and Competition conditions, $F(1, 272) = 0.16, p = .69$, effect size $r = .02$.

Pride

There was a significant effect of Time on pride, $F(1, 262) = 155.92, p < .001$, effect size $r = .61$, whereby across conditions, participants reported increasing feelings of pride over the course of the intervention. Condition and Time interacted significantly to predict pride, $F(2,$

262) = 6.82, $p = .001$, effect size $r = .16$. Planned comparisons revealed that, consistent with hypotheses, the Competition condition led to significantly greater increases in feelings of pride than the Caregiving, $F(1, 262) = 4.16, p = .04$, effect size $r = .13$, and Control conditions, $F(1, 262) = 13.63, p < .001$, effect size $r = .22$. There was no significant difference between the Caregiving and Control conditions, $F(1, 262) = 2.56, p = .11$, effect size $r = .10$.

Distress

There was a significant effect of Time on distress, $F(1, 259) = 68.48, p < .001$, effect size $r = .46$, whereby across conditions, participants reported decreasing distress over the course of the intervention. No significant interaction of Condition and Time was found, $F(2, 259) = 1.71, p = .18$, effect size $r = .08$, indicating that the condition to which participants were assigned did not influence the change in distress experienced over the course of the intervention.

Feelings of Threat

There was a significant effect of Time on feelings of threat, $F(1, 249) = 66.43, p < .001$, effect size $r = .46$, whereby across conditions, participants reported decreasing feelings of threat over the course of the intervention. No significant interaction of Condition and Time was found, $F(2, 249) = 0.68, p = .51$, effect size $r = .05$, indicating that the condition to which participants were assigned did not influence the change in feelings of threat experienced over the course of the intervention.

Comparison Motivation

Social Comparison Motivation. There was a significant effect of Time on social comparison motivation, $F(1, 265) = 29.16, p < .02$, effect size $r = .31$, whereby across conditions, participants reported decreasing motivation to make social comparisons of any sort

over the course of the intervention. Condition and Time interacted significantly to predict social comparison motivation, $F(1, 265) = 3.50, p = .03$, effect size $r = .11$. Planned comparisons revealed that, consistent with hypotheses, the Caregiving condition led to significantly greater decreases in social comparison motivation than the Competition condition, $F(1, 265) = 6.90, p < .01$, effect size $r = .16$. There were no significant differences between the Caregiving and Control conditions, $F(1, 265) = 1.14, p = .29$, effect size $r = .07$, or the Competition and Control conditions, $F(1, 265) = 2.71, p = .10$, effect size $r = .10$.

Appearance Comparison Motivation. Similarly, there was a significant effect of Time on appearance comparison motivation, $F(1, 264) = 35.08, p < .001$, effect size $r = .34$, whereby across conditions, participants reported decreasing motivation to make appearance comparisons over the course of the intervention. However, no significant interaction of Condition and Time was found, $F(2, 264) = 2.10, p = .12$, effect size $r = .09$, indicating that the condition to which participants were assigned did not influence the change in appearance comparison motivation experienced over the course of the intervention.

Secondary Analyses

Appearance Comparison Behaviour

Viewing Times. Table 1.3 presents means and standard deviations for the viewing time data by condition and for the sample as a whole. Images 1, 4, 5, 7, and 9 had been categorized during task design as comparison-oriented; images 2, 3, 6, 8, and 10 were categorized as non-comparison-oriented. The total time participants spent viewing all 10 images did not significantly differ as a function of condition, $F(2, 290) = 0.72, p = .49$, effect size $r = .05$. Furthermore, the average time participants spent viewing each non-comparison-oriented image

did not significantly differ as a function of condition, $F(2, 290) = 0.14, p = .87$, effect size $r = .02$. However, a trend-level difference was found for the effect of condition on the average viewing time per comparison-oriented image, $F(2, 290) = 2.77, p = .06$, effect size $r = .10$. Planned comparisons suggested that participants in the Competition condition spent significantly more time viewing each comparison-oriented image than those in the Caregiving condition, $F(1, 290) = 5.22, p = .02$, effect size $r = .13$. No significant differences were seen between the Competition and Control conditions, $F(1, 290) = 2.81, p = .09$, effect size $r = .10$, or the Caregiving and Control conditions, $F(1, 290) = 0.46, p = .50$, effect size $r = .04$.

Because image viewing times varied widely between participants ($SD = 40.63$), viewing times were further investigated in terms of the relative proportion of time participants spent on viewing all comparison-oriented images as a proportion of the total time they spent on all images. The proportion of time spent on comparison-oriented images did not significantly differ as a function of condition, $F(2, 289) = 2.14, p = .12$, effect size $r = .09$.

Self-Reported Comparisons. Overall, participants reported making appearance comparisons to an average of 3.06 ($SD = 1.65$) of the 10 images. The mean number of self-reported comparisons did not significantly differ as a function of condition, $F(2, 216) = 0.28, p = .76$, effect size $r = .04$. Table 1.4 presents the percentage of participants reporting appearance comparisons for each image. Participant endorsement of comparison to images ranged from 7.83% (i.e., Image 10) to 71.89% (i.e., Image 7) across all images. As expected, the percentage of participants who self-reported making appearance comparisons to non-comparison-oriented images (range = 7.83% (i.e., Image 10) to 16.13% (i.e., Image 6)) was lower than the proportion who reported making comparisons to comparison-oriented images (range = 52.53% (i.e., Image 4) to 71.89% (i.e., Image 7)). One exception was Image 5, which we had considered to be

comparison-oriented, to which only 11.06% of participants endorsed a comparison. The average proportion of participants who reported making comparisons to comparison-oriented images ($M = 49.58\%$) was significantly larger than that of participants who reported making comparisons to non-comparison-oriented images ($M = 11.71\%$), $Z = 8.56, p < .05$.

Viewing Times with Regrouped Images. Due to the low percentage of self-reported comparisons made to Image 5, viewing time analyses were reinvestigated with this image grouped with the other non-comparison-oriented images. This regrouping resulted in 4 images being categorized as comparison-oriented (i.e., 1, 4, 7, and 9), and 6 images being categorized as non-comparison-oriented (i.e., 2, 3, 5, 6, 8, and 10). With this new grouping, the average time participants spent viewing each non-comparison-oriented image again did not significantly differ as a function of condition, $F(2, 290) = 0.02, p = .98$, effect size $r = .01$. However, there was a significant effect of condition on the average viewing time per comparison-oriented image, $F(2, 290) = 3.37, p = .04$, effect size $r = .11$. Planned comparisons suggested that participants in the Competition condition spent significantly more time viewing each comparison-oriented image than those in the Caregiving, $F(1, 290) = 5.69, p = .02$, effect size $r = .14$, and Control conditions, $F(1, 290) = 4.49, p = .04$, effect size $r = .12$. No significant differences were seen between the Caregiving and Control conditions, $F(1, 290) = 0.11, p = .74$, effect size $r = .02$.

Furthermore, the relative time participants spent on comparison-oriented images as a proportion of the total time they spent on all images significantly differed as a function of condition, $F(2, 289) = 3.17, p = .04$, effect size $r = .10$. Planned comparisons suggested that participants in the Competition condition spent a significantly greater proportion of time on comparison-oriented images than those in the Caregiving, $F(1, 289) = 5.19, p = .02$, effect size $r = .13$, and Control conditions, $F(1, 289) = 4.43, p = .04$, effect size $r = .12$. No significant

differences were seen between the Caregiving and Control conditions, $F(1, 289) = 0.06, p = .80$, effect size $r = .01$.

Summary of Results for Appearance Comparison Behaviour. Initial analyses indicated a trend-level difference between conditions on the average viewing time per comparison-oriented image, whereby participants in the Competition condition spent significantly more time on this category of images than those in the Caregiving condition. While the proportion of participants reporting that they made appearance comparisons to images initially grouped as comparison-oriented was significantly higher than those reporting that they made appearance comparisons to images initially grouped as non-comparison-oriented, Image 5 was an exception to this rule. When analyses were re-run with Image 5 regrouped to the non-comparison-oriented category, the trend-level effect of condition on the average viewing time per comparison-oriented image became significant. In general, participants in the Competition condition spent a significantly greater proportion of their viewing time on comparison-oriented images than those in the other conditions.

Social Comparison Orientation as a Moderator

Trait social comparison orientation did not significantly interact with condition to predict any of the dependent variables at Time 2, controlling for Time 1 scores. Therefore, contrary to hypotheses, this variable did not influence the impact of interventions on any of the outcomes considered in this study.

Discussion

Aiming to replicate findings from Study 1 using a live rather than recalled appearance comparison, this study examined the real-time momentary effects of cultivating a compassionate,

caregiving orientation toward the target of an unfavourable appearance comparison made in a social media setting. In a one-hour online session, a mixed sample of college and community women were asked to make an unfavourable appearance comparison to a target they selected from their personal Instagram feed, and then guided through the application of a randomly assigned intervention. As with Study 1, the caregiving intervention of interest was compared to two other conditions, the Competition intervention which involved engaging in downward comparisons on non-appearance domains with the same target, and the Control condition which involved distracting oneself by counting backwards. While participants across all three conditions generally experienced decreases in negative affect, body dissatisfaction, and comparison motivation; and increases in positive affect, social safeness/connectedness, and self-compassion from baseline/pre- to post-intervention, findings also partially supported the hypothesis that those who practiced the caregiving intervention would experience greater momentary benefits relative to the other two interventions.

With regard to the affective variables of interest, participants in the Caregiving condition reported greater increases in feelings of peacefulness than those in the Control condition. This capacity of the caregiving mentality to promote feelings of peacefulness in the aftermath of an unfavourable appearance comparison reinforces the theoretical relationship between this form of positive affect and the soothing system as put forth in Gilbert's (2009) tripartite model of affect regulation. In contrast to previous findings, however, participants in the Competition condition also tended to report greater increases in feelings of peacefulness than those in the Control condition. Participants in the Competition condition also reported greater feelings of pride than those in both the Caregiving and Control conditions. This again reinforces the theoretical link between this form of positive affect and the behaviourally activating drive system, which is

oriented towards striving for and deriving pleasure from accomplishments or rewards (Gilbert, 2009). That is, these feelings of pride could stem from the state of superiority participants may have achieved in engaging in the competition intervention, which activates the competitive mentality as participants make favourable comparisons in non-appearance domains towards their comparison target.

Results indicated that the intervention condition to which participants were assigned did not influence the amount of change in body dissatisfaction they experienced. Rather, contrary to hypotheses, state body dissatisfaction decreased over time across all three conditions. It may be that at the momentary level, simply managing in some way the negative emotions that follow an unfavourable appearance comparison is sufficient to decrease negative feelings about one's body. However, it is also possible that the mere passing of time contributed to the reduction in body dissatisfaction participants experienced. That is, state body dissatisfaction would understandably fade naturally as time passes following an unfavourable appearance comparison. Future research could include a "pure" control condition to shed further light on this issue.

While participants across all three conditions reported decreased state motivation to make both appearance comparisons and social comparisons in general, interestingly, participants in the Caregiving condition additionally reported decreased motivation to make general social comparisons relative to those in the other two conditions. It is curious that the reduced motivation to make appearance comparisons was no greater in the Caregiving condition than in the other two conditions. One possible explanation for this could be that in the context of cultivating compassion for their comparison target, participants are oriented to think more broadly about comparisons in general and the appearance domain loses its salience. It could also be that demand characteristics affected reports of appearance comparison motivation given the

study's explicit focus on intervening with appearance comparisons; this may have made it harder to discover any between-condition differences. For social comparisons in general, however, demand characteristics may have been less at play thereby making it more possible to determine differences between conditions. Future research should continue to explore the relative effects of these interventions on the motivation to make social comparisons, both in general and within the appearance domain.

Consistent with hypotheses, the Caregiving intervention seemed to offer unique benefits with regards to self-compassion. It increased state self-compassion scores on the validated self-report measure more than the Competition and Control conditions and on the VAS item more than the Control condition. It appears that responding to appearance comparisons by cultivating compassion and loving-kindness towards comparison targets may yield more compassion and understanding toward one's own personal distress and inadequacies – at least momentarily – than generating downward comparisons towards targets on non-appearance domains and than distracting oneself cognitively. Indeed, research suggests that thinking or behaving compassionately towards others can activate support-giving schemas that promote compassion toward one's own distress (Breines & Chen, 2012; Hermanto et al., 2017). In adopting a caregiving mindset towards others, focused on the fact that all people suffer and wish to be happy, individuals likely broaden their view of comparison targets and become attuned to their shared human experience. This may facilitate greater attention to one's own personal suffering with a sense of common humanity, a key element of self-compassion (Feliu-Soler et al., 2016).

Surprisingly, certain hypotheses were not supported in terms of the interpersonal experiences expected to ensure from the caregiving intervention relative to the other two. Feelings of social safeness increased across all three conditions and this was not moderated by

condition; this finding suggests that the momentary practice of compassion toward a comparison target may not yield immediate unique advantages in terms of how much warmth and belongingness women feel in their general social environments. It is important to consider, however, that the lack of differences seen between conditions may be in part due to a ceiling effect observed with the SSPS (as seen in Table 1.2), where even at baseline, mean scores were reported near the maximal end of the measure's range. Nevertheless, future research might examine whether the repeated practice of compassion over time would result in larger relative increases in social safeness over time, perhaps using a different measure. Furthermore, while the Caregiving intervention led to greater feelings of connectedness to others in general relative to the Control intervention, so too did the Competition intervention, which was unexpected. Perhaps feeling superior to an individual in some domains helps to restore feelings of connectedness to that person. However, the Caregiving condition did seem to offer some interpersonal benefits over and above the other two conditions, as it led to greater increases in feelings of connectedness towards comparison targets. This outcome is encouraging in demonstrating that cultivating compassion even for a brief period of time can leave participants feeling more connected to a woman whom just moments earlier was seen as a social threat in the context of an unfavourable appearance comparison.

Although for a number of dependent variables, the Competition intervention seemed to be as beneficial as the Caregiving intervention, it would be prudent to remain cautious about the endorsement of the downward comparison strategy as a way to intervene with appearance comparisons and their harms. While downward comparisons may offer momentary emotional benefits, the routine adoption of or overreliance on a competitive mentality may ultimately be detrimental to one's physical, psychological, and social well-being (e.g., Leahey et al., 2007; Lin

& Soby, 2016). Indeed, for women who are more comparison-oriented, the Caregiving intervention has previously been found to be more effective than the Competition intervention at reducing the harmful effects of appearance comparisons over a 2-day period (Vimalakanthan et al., 2018). Furthermore, the present study's findings suggest that while the Caregiving intervention may not have demonstrable momentary benefits over and above the Competition intervention for affective and body-specific well-being, there may be unique intrapersonal and interpersonal benefits in cultivating compassion toward attractive peers on social media.

In our secondary analyses, trait social comparison orientation did not emerge as a moderator of any of the relationships between condition and the outcomes investigated in this study. Within the context of a brief online intervention focused on momentary effects, such a pattern of findings may be too difficult to detect. The moderating effect of this trait – if present – may only become evident over a much longer period of examination. Future longitudinal research exploring these relationships may prove more fruitful.

Some intriguing findings arose in the behavioural task that was developed specifically for use in this study, in which participants were asked to view a mix of comparison-oriented and non-comparison-oriented images. As the task was completed under conditions of deception, the amount of time participants spent on each image was recorded without their awareness. This viewing time was designated as a proxy for participants' appearance comparison behaviour – the rationale being that the longer a participant spent viewing an image, the more likely they were to be attending to the features of the image and engaging in comparison. Based on the image groupings that were established during task development, a trend-level effect was found whereby condition influenced the average time participants spent viewing each comparison-oriented

image. As expected, participants in the Competition condition spent significantly more time, on average, viewing each comparison-oriented image than those in the Caregiving condition.

However, initial image groupings did not align exactly with participants' self-report of appearance comparisons. Specifically, the proportion of participants endorsing comparison to Image 5 (originally grouped as a comparison-oriented image) was quite low and actually fell within the range of participant endorsement for non-comparison-oriented images. When analyses were reconducted with this image grouped with the other non-comparison-oriented images, the abovementioned trend-level effect became statistically significant. Specifically, participants in the Competition condition spent significantly more time, on average, viewing each comparison-oriented image than those in the other two conditions. The participants in the Competition condition also spent a significantly greater proportion of their total viewing time on comparison-oriented images than those in the other two conditions.

The collection of findings from this behavioural task is consistent with my hypothesis that participants who cultivated a caring, compassionate orientation toward comparison targets would subsequently engage in fewer appearance comparisons relative to participants in the other conditions. Interestingly, these findings did not precisely converge with participants' self-report of their motivation to make comparisons. That is, participants in the Caregiving condition reported greater decreases in their motivation to make social comparisons in general, but not in their motivation to make appearance comparisons, relative to those in the other two conditions. Findings from the behavioural task also revealed that participants in the Competition condition, who were instructed to make downward comparisons, may remain more entrenched in the competitive mentality even after they are told that the study has concluded; these results highlight the potential pitfalls of relying on making downward comparisons to buffer against the

consequences of unfavourable appearance comparisons. Under the assumption that more time spent viewing comparison-oriented images reflects appearance comparison behaviour, the present results suggest that cultivating a caring, compassionate orientation toward comparison targets may have a greater, more constructive impact on subsequent comparison-oriented behaviours. However, because we cannot be certain that the task we developed truly assessed appearance-comparison behaviour, these conclusions are tentative only.

Theoretical and Practical Implications

Building on earlier work grounded in social mentality theory (Vimalakanthan et al., 2018), findings from the present study continue to suggest that this theoretical model is a valuable perspective from which to understand and develop interventions for the problem of appearance comparisons. Notably, the present study is the first to examine strategies that intervene with these harmful comparisons in the moment as they occur on social media, and to demonstrate that cultivating compassion for others in this context may increase connectedness to these other people while also increasing compassion for self. These findings add to a growing body of research establishing the benefits of compassion for others and self on one's physical, psychological, and social well-being (e.g., Brown et al., 2003; Cosley et al., 2010; Ferreira et al., 2013; Hutcherson et al., 2008; Neff et al., 2007; Neff & Pommier, 2013) and highlight the value of the practice in the body image domain. Though the effects observed were momentary, it is noteworthy that such a brief shift in mindsets can lead women to experience more positive attitudes toward themselves and others compared to alternate strategies.

From a more practical point of view, these preliminary results suggest that women may benefit from being taught to cope with unfavourable appearance comparisons and their

associated harms by cultivating a caring, compassionate orientation toward comparison targets. Clinicians and intervention programs working with individuals with body dissatisfaction or on social media literacy could assess the extent to which their clients make appearance comparisons and teach this new strategy as a way of improving well-being and social connectedness over time.

While study results sometimes suggested that the strategy of making more downward comparisons may be as beneficial as that of cultivating care and compassion toward comparison targets in some cases, those exceptions appeared to be less robust than the broader pattern of findings. Regardless, more research is needed to determine both of these strategies' effects over time. For example, the question remains whether the competition strategy could inadvertently foster overreliance on a competitive mentality over time.

Limitations and Future Directions

This study had a number of limitations that should be addressed in future research. First were the limitations encountered in the use of the Mechanical Turk (MTurk) platform to recruit community participants. While this online crowdsourcing platform allowed for rapid and broad-level recruitment, perhaps even more so than traditional methods of community participant recruitment, as previously outlined, most of the data from this sample could not be used. Nearly half of the participants who signed up for the study on MTurk had likely not read the study details, as they were excluded due to ineligibility, and about a quarter of the responses were later determined as likely to be fraudulent (i.e., bots or scripts). There was also some attrition among participants recruited from this platform. The issues encountered with MTurk recruitment were not an isolated experience. In a case of unfortunate timing, shortly after this study was conducted, the broader psychological research community began to voice concerns about a

substantial decrease in data quality from this platform; indeed, evidence later suggested that these concerns were legitimate (Chmielewski & Kucker, 2020). In light of these concerns, a high degree of caution was exercised in screening data from MTurk participants, and a very large portion of the sample was excluded. However, this stringent data cleaning approach may have had downstream effects on data analyses. For example, although attrition was not significant between conditions, the baseline differences seen between conditions on a few of the dependent variables could have been a result of this approach. With future research utilizing the MTurk platform, the inclusion of response validity indicators, CAPTCHA verification, and other data screening methods is crucial to mitigate risks to data quality.

Second, participation was limited to women, which was a decision made on the basis of research highlighting that women make more upward appearance comparisons and consequently, are more adversely affected in terms of body image (Strahan et al., 2006; Thompson & Heinberg, 1993). However, it remains true that men also make appearance comparisons, and it would be interesting to investigate in future the generalizability of the caregiving intervention to this population. Furthermore, the sample was predominantly Caucasian, and as such, future research should broaden the investigation of this intervention's relative efficacy to cross-cultural samples. While recruiting from both the community and an undergraduate institution allowed me to draw from different age groups and geographical contexts – ultimately strengthening external validity – it would be valuable to continue to broaden the generalizability of the present findings.

Third, while participants browsed their own Instagram accounts on their personal devices in the interest of ecological validity, this uncontrolled setting introduces more variability in content and context, which may have affected results. Participants may have viewed a range of content or completed the study in a context preventing them from fully immersing themselves

and/or unconsciously affected their responses. In the interest of increasing compliance, future studies may benefit from a more balanced design in which participants are able to access their personal accounts in a lab setting, perhaps, where oversight is possible.

Fourth, there were a few dependent variables for which baseline levels significantly differed between conditions at baseline; these included state body dissatisfaction (as measured by both the BISS and the VAS) and feelings of pride. There was also a trend-level difference for self-compassion (VAS item). Strangely, on these variables, it appeared as though those in the Caregiving condition (as well as those in the Competition condition for VAS body dissatisfaction and feelings of pride) started out “inferior” to those in the Control condition. One could argue, as a result, that those in the Caregiving and Competition conditions had more leeway to have their scores on these outcome measures be affected by the intervention. However, condition did not influence changes in state body dissatisfaction (as captured by the BISS or the VAS) experienced over the course of the intervention. It is true that for the pride VAS item, the lower scores with which those in the Competition condition started relative to those in the Control condition may have contributed to the significantly greater increases they then experienced over the course of the intervention relative to the latter group. Similarly, given the trend-level baseline differences seen with the self-compassion VAS item, it is possible that the lower scores with which those in the Caregiving condition started relative to those in the Control condition may have contributed to the significantly greater increases they then experienced over the course of the intervention relative to the latter group. However, those in the Caregiving condition also saw significantly greater increases in self-compassion as measured by the validated SCS-SF – which shared a strong positive correlation with the self-compassion VAS item – relative to those in the Control condition, without any baseline differences on this measure between the two conditions.

Nevertheless, future research is needed to resolve these sorts of inconsistencies, and the inclusion of more validated measures as well as more rigorous data screening if platforms such as MTurk are used, as outlined above, may be helpful in this regard moving forward.

Fifth, in studying this intervention at a momentary level, I was limited to a short time period during which only a few measures could be administered. A long-term study period may help participants become more familiar with their assigned intervention, engage in it of their own volition, and consequently, more fully benefit from its practice. This may be especially true of the novel caregiving intervention, which was likely an unfamiliar strategy for participants who practiced it. A longitudinal study design would also make it possible to investigate the sustainability and effects of the different strategies over time. Differences in sustainability could explain the mixed findings on the efficacy of the downward comparison strategy, which has demonstrated some advantage to some women in some studies, but has not in others (e.g., Fitzsimmons-Craft, 2017; Leahey et al., 2011; Lin & Kulik, 2002; Lin & Soby, 2016; Vimalakanthan et al., 2018). A long-term study period in a more natural context would also overcome the limitation of having to instruct participants to make comparisons, instead allowing them to naturally arise.

Finally, in a bid to reduce reliance on self-report measures and avoid responses biases such as self-presentation concerns, a behavioural task was developed for this study to investigate appearance comparison behaviour. Due to the novelty of this task, the materials and procedures were not rigorously tested and validated at the time of implementation. Due to ethical concerns about sourcing images from Instagram, the pool of volunteers from which images were recruited was small (i.e., 14 people) and were individuals known to the research team. Furthermore, the categorization of images as comparison-oriented or non-comparison-oriented was developed

with input from only a small group of women. Moreover, conclusions derived from results using this tasks hinge on the assumption that the time participants spent viewing images could be equated to their engagement in an appearance comparison with that image. Given the deceptive nature of the task, it is possible that participants were actually spending time rating the quality of the images as they had been instructed to do. Finally, as participants were completing this study online, they may have been distracted, especially if they were under the impression that they were completing a task that was unrelated to the main study. Taken together, this could mean that during their recorded viewing time, participants were not necessarily attending to the image on screen or engaging with it to make an appearance comparison. Future research may benefit from continued development and study of this behavioural task to determine whether the present study's findings are robust. It may also be helpful for participants to complete the task (or the whole study, as mentioned earlier) in a lab setting with oversight, or with technology that would conclusively detect whether participants were physically attending to the images, such as eye tracking equipment.

Conclusion

This study builds on previous work applying social mentality theory to the harmful practice of appearance comparisons and reinforces the benefits of adopting a caregiving mindset towards the targets of one's unfavourable comparisons, even at a momentary level. If replicated, results would suggest that although body dissatisfaction and social safeness may increase in the moments following the practice of various self-help strategies, cultivating a caring, compassionate orientation toward comparison targets may be most effective at reducing comparison motivation and appearance comparison behaviour, and boosting self-compassion and feelings of connectedness towards women previously viewed as social threats.

Table 1.1*Correlations between Dependent Variables at Baseline*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10	11.
1. BD-BISS	--										
2. SCS-SF	-.41***	--									
3. SS	-.40***	.50***	--								
4. BD-V	.81***	-.43***	-.45***	--							
5. SC-V	-.50***	.63***	.46***	-.58***	--						
6. CO	-.33***	.35***	.71***	-.41***	.50***	--					
7. Distress	.18**	-.37***	-.28***	.18**	-.21***	-.17**	--				
8. Threat	.03	-.20**	-.14*	-.01	-.04	-.07	.49***	--			
9. Pride	-.55***	.45***	.46***	-.63***	.63***	.53***	-.13*	.08	--		
10. Peace	-.37***	.43***	.48***	-.48***	.57***	.56***	-.35***	-.05	.61***	--	
11. ACM	.20**	-.24***	-.18**	.11	-.08	.10	.21***	.19**	.08	.04	--
12. SCM	.16*	-.22***	-.13*	.05	-.09	.10	.18**	.18**	.08	.07	.88***

Note. BD-BISS = Body dissatisfaction (BISS); SCS-SF = Self-compassion Scale (SCS-SF); SS = Social Safeness (SSPS); BD-V= Body dissatisfaction (VAS measure); SC-V = Self-compassion (VAS measure); CO = Connectedness to Others; ACM = Appearance Comparison Motivation; SCM = Social Comparison Motivation

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 1.2*Dependent Variable Means (and Standard Deviations) across Conditions at Baseline and Post-Intervention*

Variables	Score Ranges	Conditions					
		<u>Caregiving</u>		<u>Competition</u>		<u>Control</u>	
		Baseline	Post	Baseline	Post	Baseline	Post
Body dissatisfaction (BISS)	1-9	5.71 (1.47)	5.27 (1.46)	5.39 (1.48)	4.98 (1.60)	5.06 (1.65)	4.83 (1.69)
Body dissatisfaction (VAS)	0-100	60.46 (24.54)	55.66 (20.25)	56.76 (26.07)	52.56 (23.43)	48.02 (28.45)	51.08 (22.46)
Self-compassion (SCS-SF)	1-5	2.69 (0.72)	3.09 (0.65)	2.80 (0.75)	3.01 (0.75)	2.79 (0.77)	2.98 (0.76)
Self-compassion (VAS)	0-100	43.20 (27.14)	51.85 (23.90)	45.90 (25.43)	49.84 (26.28)	52.01 (27.86)	51.71 (24.95)
Social safeness (SSPS)	0-4	3.27 (0.98)	3.43 (0.96)	3.35 (0.92)	3.41 (0.96)	3.32 (0.93)	3.39 (0.93)
Connectedness to others (VAS)	0-100	49.46 (27.42)	51.05 (25.56)	52.50 (25.30)	53.79 (25.86)	56.84 (25.18)	48.89 (24.70)
Connectedness to comparison target (VAS) ^a	0-100	30.95 (25.56)	49.01 (24.00)	34.52 (26.52)	44.49 (27.04)	37.31 (28.24)	42.42 (27.40)
Distress (VAS)	0-100	38.43 (30.39)	29.77 (25.37)	40.30 (28.37)	32.96 (23.48)	38.59 (29.30)	35.47 (26.55)

Threat (VAS) ^b	0-100	19.09 (24.48)	22.49 (23.60)	21.74 (25.41)	26.40 (21.84)	22.34 (29.04)	28.30 (26.31)
Pride (VAS)	0-100	31.08 (23.75)	42.00 (25.63)	37.28 (24.70)	48.75 (25.69)	45.76 (27.06)	47.99 (24.11)
Peace (VAS)	0-100	45.31 (27.51)	52.38 (25.47)	49.07 (25.48)	50.33 (25.45)	53.15 (26.28)	50.00 (24.80)
Appearance comparison motivation (VAS)	0-100	44.76 (27.49)	36.48 (25.00)	45.14 (26.80)	38.31 (23.40)	44.17 (30.88)	38.64 (26.87)
Social comparison motivation (VAS)	0-100	46.70 (26.20)	36.43 (23.14)	46.80 (25.84)	41.45 (23.34)	45.43 (30.28)	38.95 (26.51)

^aConnectedness to comparison target (VAS) was not measured at baseline as target had yet to be introduced; pre-intervention scores are reported here instead. ^bFeelings of threat increased from baseline to pre-intervention as a consequence of the unfavourable appearance comparison that is made between these timepoints. Although threatened feelings decreased from pre-intervention to post-intervention, unlike other dependent variables, they did not fall beyond baseline levels. Means and standard deviations for feelings of threat at pre-intervention were as follows – Caregiving: 37.53 (30.12); Competition: 37.20 (29.70); and Control: 38.88 (30.09).

Table 1.3*Means and Standard Deviations for Behavioural Task Viewing Times (in seconds)*

Variables	Full Sample Mean (<i>SD</i>)	Conditions		
		<u>Caregiving</u>	<u>Competition</u>	<u>Control</u>
		Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)
All images – total viewing time	59.06 (40.63)	57.07 (33.50)	63.30 (42.09)	57.20 (41.86)
Comparison-oriented images – total viewing time	29.36 (21.57)	26.35 (17.51)	33.55 (25.30)	28.42 (20.97)
Non-comparison-oriented images – total viewing time	29.71 (25.41)	30.72 (25.62)	29.75 (23.51)	28.78 (26.94)
Comparison-oriented images – average time per image	5.87 (4.31)	5.27 (3.50)	6.71 (3.50)	5.68 (4.19)
Non-comparison-oriented images – average time per image	5.94 (5.08)	6.14 (5.12)	5.94 (5.12)	5.76 (5.39)
Comparison-oriented images – proportion of total time spent	50.61% (13.09%)	48.45% (11.53%)	52.35% (13.47%)	51.01% (13.88%)
Non-comparison-oriented images – proportion of total time spent	49.39% (13.09%)	51.55% (11.53%)	47.65% (13.47%)	48.99% (13.88%)

Table 1.4*Proportion of Participants Reporting Appearance Comparisons per Image*

Image	Percentage of Participants Reporting Comparison (%)
1	56.22
2	8.76
3	14.29
4	52.53
5	11.06
6	16.13
7	71.89
8	11.52
9	56.22
10	7.83

Note. Images 1, 4, 5, 7, and 9 in bold were categorized as comparison-oriented; images 2, 3, 6, 8, and 10 were categorized as non-comparison-oriented.

Study 3

Studies 1 and 2 examined the momentary effects of cultivating compassion toward the target of a past and current unfavourable appearance comparison, respectively, finding that the practice yielded certain momentary benefits to affective and body-specific well-being, as well as to participants' relationships with themselves and others. For certain outcome variables, these benefits were often greater than those offered by other strategies under study. In this final stage of my dissertation, I sought to replicate these momentary benefits and expand upon these findings in crucial ways, answering research questions about disparities that arose in conducting Studies 1 and 2. As with these previous studies, Study 3 investigated whether after an unfavourable appearance comparison, the adoption of a caregiving mentality might be more beneficial than adopting a competitive mentality (i.e., making favourable comparisons towards the target) to participants' affective and body-specific well-being, comparison motivation, and their relationships with themselves and others. The same interventions/conditions from Studies 1 and 2 were used, with the exception of the Control condition's distraction intervention, which was omitted. This decision was based on a general pattern of demonstrable superiority of one or more of the 'active' interventions to the control intervention on most outcomes in both of the previous studies for which there was a Condition x Time effect. Notably, Study 3 also: 1) directly examined the potential moderating role of comparison context (i.e., live vs. recalled comparison) on momentary intervention effects; 2) investigated the relative sustainability of momentary intervention effects over a three-day period of time; and 3) examined the relative effects of repeated intervention practice on trait variables over this time period.

Importantly, the present study sought to examine whether comparison context – that is, whether participants are made to recall a recent unfavourable appearance comparison or to

engage in a ‘live’ one during the study itself – interacts with intervention condition to predict outcomes. Given that Study 1 was conducted exclusively in the context of a recalled comparison while Study 2 was conducted exclusively in the context of a live comparison, discrepancies in results between the two studies may have been due to this difference in comparison context. For example, recalled appearance comparisons may be more emotionally salient, as emotional events are often remembered with more accuracy and vividness than events without an emotional component (Reisberg & Hertel, 2004). However, this reliance on participants’ memory limits the control of factors such as recall accuracy, or the temporal distance of the comparison. Participants may also have since processed or reframed their reactions to the recalled comparison. A live comparison, by contrast, allows for a more similar experience between participants, and is no longer influenced by factors such as recall accuracy, temporal distance, or post-memory processing/reframing. However, the particular comparison that arises in the moment – or in Study 2, that participants were prompted to make – may not be as distressing as a comparison that participants were able to recall in memory, presumably due to the marked distress it elicited. Given these differences, it is important to explore whether the caregiving intervention may be more beneficial in a live comparison context than in a recalled comparison context, or vice versa. It could be that shifting to a compassion-based mindset may be more helpful immediately after a live comparison, when participants are likely to be most negatively affected and therefore benefit most from support in the form of this intervention. However, it may also be the case that the caregiving intervention is more efficacious than the competition intervention upon recall of an appearance comparison, when participants are not as emotionally reactive or actively distressed by the emotions of the comparison (Burke et al., 2005). While these ideas are speculative, the broader question of how the context of an appearance comparison

may influence the relative efficacy of cultivating care and compassion towards a comparison target versus making downward or favourable comparisons towards them remains an important one to pursue.

Also key to extending findings from Studies 1 and 2 is the question of whether the momentary benefits the interventions yielded are sustainable over a longer period of time. Both Studies 1 and 2 were conducted under the span of 60 minutes. While this design was helpful for the objective of investigating state-level outcomes, a longitudinal study design would allow for the examination of the sustainability of any momentary benefits in addition to the investigation of more dispositional outcomes and how these may be different across interventions. A design with longitudinal follow-up may potentially also help clarify some of the mixed findings on the efficacy of the competition intervention, which in my previous work has been as efficacious as the caregiving intervention for some outcomes of interest, but not so for others. For example, findings from Study 2 suggested that the caregiving intervention was no more helpful than the competition intervention in decreasing state body dissatisfaction following a live unfavourable appearance comparison. However, while the caregiving intervention may have as much momentary impact as the competitive, downward comparison intervention on body image immediately following such an emotionally distressing experience, it could be that repeated practice of the intervention over time is what effects more change. It also remains a possibility that while the downward comparison strategy may seem beneficial in the short-term, it may still pose harm to women's overall well-being over time if routinely adopted (e.g., Leahey et al., 2007; Lin & Soby, 2016). Comparing these interventions over a longer period of time may shed light on whether this may be the case. Finally, a longitudinal study design also provides the opportunity for participants to become more familiar with their assigned intervention and use it

of their own volition in response to naturally occurring appearance comparisons (rather than those that arise out of study instructions). This more naturalistic design will hopefully bolster the external validity of the caregiving intervention.

Study Objectives

1. Test the hypothesis that the caregiving intervention will be more beneficial than the competition intervention to participants' momentary affective and body-specific well-being, comparison motivation, and their relationships with themselves and others.
2. Examine on an exploratory basis whether:
 - a. The context of the unfavourable appearance comparison made by participants – that is, whether the comparison is live or recalled – influences momentary benefits to affective and body-specific well-being, comparison motivation, and participants' relationship with themselves and others; and:
 - b. The context of the comparison interacts with the assigned intervention to influence these momentary benefits.
3. Test the hypothesis that over the course of a 72-hour follow-up period, during which participants deploy their randomly assigned intervention in response to unfavourable appearance comparisons, the caregiving intervention will demonstrate greater sustainability than the competition intervention in terms of its momentary benefits to affective and body-specific well-being, comparison motivation, and participants' relationship with themselves and others.
4. Test the hypothesis that the caregiving intervention will be more beneficial than the competition intervention to participants' dispositional body-specific well-being and their relationship with themselves and others by the end of the 72-hour period.

Of note, Study 3, more so than its predecessors, shares a few fundamental similarities with my Master's research (Vimalakanthan et al., 2018). Although not listed below as an explicit study objective, an important aim of this study – and more broadly, this program of research – is replication of this earlier work. The “replication crisis” occurring within (though not limited to) the field of psychology that was first acknowledged approximately a decade ago, but is as of yet, ongoing, makes clear the need to balance advances in research with confirmation of initial results with multiple studies (Maxwell et al., 2015; Shrout & Rodgers, 2018). As a result, much like my Master's study, Study 3 sought to examine the relative effects of repeated intervention practice on trait variables over a longitudinal time period and employed a very similar study design to do so. Importantly, however, Study 3 was also designed to be an extension of this research, rather than a direct replication. Notable differences include, for example, an extended study period, a broader scope on outcomes of interest beyond body image-related outcomes, and the examination of not only trait-level outcomes but also the sustainability of state-level outcomes. Most importantly, while my Master's work focused on women who were higher in trait social comparison orientation, Study 3 sought to explore the same relationships among a more representative sample of women from the general population.

Methods

Procedural Overview

This multi-part study included an in-lab session and a 72-hour (three day) “contractual period”. Figure 1 depicts the procedural flow of the study. The lab portion of the study was structured in a 2 x 2 design, with two condition pairs: one pair varying the context of the comparison (live vs. recalled); the other varying the intervention (caregiving vs. competition). In

the in-lab session (1 hour), participants completed pre-intervention questionnaires and were then randomly assigned to either recall a recent unfavourable appearance comparison, or to engage in a live unfavourable appearance comparison. Following this manipulation, they were introduced to their randomly assigned intervention (the “self-help strategy”), either the compassion-based caregiving strategy, or the downward comparison competition strategy. Participants completed state-level measures at multiple timepoints throughout the lab session. Over the 72 hours following the in-lab portion of the study, participants were instructed to practice the intervention they had learned whenever they made an unfavourable appearance comparison; we referred to this as the contractual period. This portion of the study drew from previous experimental research using contract protocols (e.g., Boone et al., 2012; Vimalakanthan et al., 2018) but lengthened the duration of the contract period from the previously used durations of 24-48 hours to 72 hours so that participants would be able to practice their assigned intervention more frequently, and consequently be more likely to observe its effects. Although 72 hours is still a relatively short amount of time for such a task, feasibility was important to consider; a longer duration may have jeopardized participant compliance. Participants completed two online surveys (15 min) mid-way through and at the end of the 72-hour contractual period to assess dispositional outcomes of interest.

Participants

Participating women were recruited via SONA, an online university research participant pool. Recruitment materials for the study advertised it as one for “Self-Help Strategies for Appearance Comparison-Related Body Dissatisfaction” and maintained transparency about its nature and purpose in the interest of achieving external validity. To be eligible, participants were required to endorse 1) making frequent appearance comparisons to other women, and 2) having a

personal Instagram account they could access during the study. The former eligibility criterion was put into place on the basis of previous research that suggests that women who more frequently engage in appearance comparisons are more vulnerable to their negative consequences (Myers & Crowther, 2009) and as a result, may benefit most from learning an intervention targeting these comparisons (Vimalakanthan et al., 2018). Focusing on this group would also be more optimal for the longitudinal component of the study, as this group would be more likely to make appearance comparisons, and consequently more likely to deploy their assigned strategy. The latter eligibility criterion held constant the social media context in which participants would engage in an appearance comparison in one of the two context conditions. The use of personal accounts was also presumed to be more naturalistic than more contrived manipulations – for example, an Instagram account constructed for study purposes. As compensation for participation, they received one credit that would be allocated towards their bonus psychology course marks.

Of the 185 individuals who signed up for this study, 1 respondent was excluded because she did not consent to proceed with the study. Another 12 respondents were excluded due to ineligibility. In total, 172 participants successfully completed the in-lab session: 85 women in the Caregiving condition and 87 in the Competition condition. These women had a mean age of 20.5 ($SD = 2.86$). Ethnic composition was: 29.7% East Asian, 29.1% White/Caucasian, 19.8% South Asian, 6.4% Middle Eastern, 6.4% Southeast Asian, 2.9% West Indian/Caribbean, 2.0% Black/African, 0.6% Hispanic, and 4.1% other not listed.

Measures

Dependent Variables

Dependent variables were measured using a mix of visual analog scales (VASs) and state- and trait-level validated measures. The VASs and state-level validated measures, administered at multiple timepoints during both the lab session and the contract period, assessed both momentary and longitudinal outcomes. The trait-level validated measures, which were administered before and after the study as well as at the midpoint of the contract period, assessed longitudinal outcomes. Figure 1 depicts points of administration for state vs. trait measures.

Visual Analog Scales. As with Studies 1 and 2, VASs were employed to measure dependent variables. During the lab session, participants completed VAS sets at the following timepoints: 1) at baseline (i.e., the start of the session); 2) after making the appearance comparison but before learning about their intervention; and 3) after learning about their intervention (i.e., the end of the lab session). They also completed the VAS sets at the mid-point of the contractual period and at the end of the contractual period to allow for examination of patterns of change from the lab session onward. Participants answered questions about the following dependent variables: mood, body dissatisfaction, distress, feelings of threat, feelings of guilt, feelings of shame, feelings of pride, feelings of strength, feelings of calm, feelings of peace, their motivation to make appearance comparisons, self-compassion, connectedness to comparison target, and connectedness to others. Items were presented with the question accompanied by a slider that participants moved to set their position on a scale anchored at labels that corresponded to 0 and 100: for example, the question “RIGHT NOW, how do you feel about your body?” allowed participants to select a position on the scale between Extremely Dissatisfied (0) and Extremely Satisfied (100).

Manipulation Checks. VASs were also used to conduct manipulation checks during the in-lab portion of the study. Participants were asked to respond to two different items representing the essence of each condition: 1) how compassionate they felt towards their comparison target; and 2) how competitive they felt towards their comparison target. They completed these items at two different timepoints: first, after they made the comparison but before they learned about their assigned intervention; and second, after they learned their intervention.

Validated Measures. A mix of state- and trait-level validated measures assessed both momentary and longitudinal outcomes throughout the study. I use the term ‘trait’ to refer to measures that assessed participants’ dispositional tendencies at baseline and typical self-reported ways of feeling, thinking, and behaving over the 72-hour period. This term stands in contrast to ‘state,’ which I use to characterize self-reports of *momentary* feelings, thoughts, and behaviours. I recognize that the term ‘trait’ is typically used to capture stable patterns, and recognize that it may not be an accurate term to describe changes in dispositions over a 72-hour period; however, I nevertheless opted to use trait-state terminology to allow the reader to more easily grasp which outcomes assessed participants’ self-reports of their typical experiences leading up to the assessment versus their experiences at the moment of assessment.

State-level measures included the following: the Body Image States Scale (BISS; Cash et al., 2002); a version of the Self-Compassion Scale (SCS; Neff, 2003) previously revised for state use by Breines and Chen (2013); and the Social Safeness and Pleasure Scale (SSPS; Gilbert et al., 2009) adapted for state use in this study. Participants completed these measures at two timepoints during the lab session: first, after making the appearance comparison but before learning about their intervention; and second, after learning about their intervention (i.e., the end

of the lab session). The BISS (Cash et al., 2002) was additionally completed at the midpoint and the endpoint of the 72-hour contract period.

Trait-level measures included the following: the Body Shape Questionnaire (Evans & Dolan, 1993); the Dietary Restraint subscale of the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994); the Body, Eating, and Exercise Comparison Orientation Measure (BEECOM; Fitzsimmons-Craft et al., 2012); the Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011); and the original Social Safeness and Pleasure Scale (SSPS; Gilbert et al., 2009). Participants completed these measures on three different occasions: (a) at the start of the study (i.e., the beginning of the lab session, pre-manipulation); (b) at the midpoint of the 72-hour contract period; and (c) as part of post-intervention measures at the end of their 72-hour contract period. At these last two timepoints, instructions on these measures were amended so that participants only reported on the time that had elapsed since the previous point of administration.

Body Dissatisfaction. The 16-item B-version of the Body Shape Questionnaire (BSQ-16B; Evans & Dolan, 1993) measured participants' body dissatisfaction. Items (e.g., "Have you felt excessively large and rounded?") were rated on a 6-point Likert-type scale ranging from 1 (*Never*) to 6 (*Always*). The BSQ-16B demonstrates good convergent and discriminant validity and is equivalent to the full-length BSQ in showing convergence with measures of eating disorder symptomatology and BMI (Evans & Dolan, 1993). Internal consistency in the current sample was excellent, with a Cronbach's alpha of .94.

State Body Image. The 6-item Body Image States Scale (BISS; Cash et al., 2002) measured participants' momentary body image. For each item, participants were asked to select one statement out of nine possible options that best describes how they feel "right now at this

very moment.” For example, on Item 3, participants selected a statement indicating that they feel anywhere from “extremely dissatisfied” to “extremely satisfied” with their weight. The BISS has been found to have good convergent and construct validity (Cash et al., 2002). The scale had a Cronbach's alpha of .80 in the present sample, indicating good internal consistency.

Restrained Eating. The 5-item Dietary Restraint subscale of the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) measured participants’ restrained eating. Items (e.g., Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?”) were rated on a 7-point Likert-type scale ranging from 0 (*Not at all*) to 6 (*Markedly*). This subscale has excellent test-retest reliability (Luce & Crowther, 1999), and Cronbach’s alpha in the present sample was .88, indicating good internal consistency.

Body Image Comparison Orientation. The 18-item Body, Eating, and Exercise Comparison Orientation Measure (BEECOM; Fitzsimmons-Craft et al., 2012) measured the extent to which participants compared their body, eating habits, and exercise habits to others on three respective subscales. Item responses were summed to yield each subscale score, which were then summed to yield a global score of body image comparison orientation. Items (e.g., “I compare my body shape to that of my peers”) were rated on a 7-point Likert-type scale ranging from 1 (*Never*) to 7 (*Always*). Scores on the BEECOM have high 2-week test-retest reliability and converge well with measures of social comparison orientation, eating disorder symptomatology, and body dissatisfaction (Fitzsimmons-Craft et al., 2012). Cronbach’s alpha in the current sample was .94, indicating excellent internal consistency.

Self-Compassion. The 12-item short-form of the Self-Compassion Scale (SCS-SF; Raes et al., 2011) measured participants’ tendency to feel compassion towards themselves in the face of distress or disappointment – for example, how kindly and non-judgmentally they may treat

themselves. Items (e.g., “I try to see my failings as part of the human condition”) were rated on a 5-point Likert-type scale ranging from 1 (*Never*) to 5 (*Always*). The SCS-SF is a reliable and valid alternative to the long-form SCS, especially when looking at the overall self-compassion score as in the current study (Raes et al., 2011). Internal consistency in the present sample was good, with a Cronbach’s alpha of .82.

State Self-Compassion. The 16-item version of the Self-Compassion Scale (Neff, 2003) previously revised for state use by Breines and Chen (2013) measured participants’ momentary self-compassion in the lab. The authors of the revision shortened the full scale (from the original 24 items) by omitting items that could not be meaningfully translated to a state context and reworded the remaining items to orient participants to their current feelings (Breines & Chen, 2013). Items (e.g., “I’m trying to be kind and reassuring towards myself”) were rated on a 5-point Likert-type scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Although this adapted scale has not yet been independently validated, it demonstrated some convergent validity in Breines’ and Chen’s (2013) study, significantly positively correlating with a measure of trait self-compassion. Internal consistency in the present sample was good, with a Cronbach’s alpha of .85.

Social Safeness. The 11-item Social Safeness and Pleasure Scale (SSPS; Gilbert et al., 2009) measured the extent to which participants experience their social environment as safe, warm, and soothing. Items (e.g., “I feel secure and wanted”) are rated on a 5-point Likert-type scale ranging from 0 (*Almost never*) to 4 (*Almost all the time*). The SSPS has been found to have strong construct and discriminant validity and to demonstrate a high degree of reliability (Gilbert et al., 2009; Kelly et al., 2012). The scale had a Cronbach's alpha of .94 in the current sample, indicating excellent internal consistency.

State Social Safeness. To assess momentary outcomes, the SSPS was slightly adapted for state use. In state-level administrations of the measure (i.e., before and after learning their randomly assigned intervention), instructions were slightly modified to orient participants to the present moment (i.e., “right now”). As the wording of the items is still meaningful in this context, no changes were made to individual items. This version of the scale had a Cronbach’s alpha of .96 in the current sample, indicating excellent internal consistency.

Intervention Compliance

Two different questions assessed intervention compliance while collecting data on participants’ experiences with their assigned intervention. These questions were included in the mid- and post-contract battery of online questionnaires completed by participants at the midpoint and end of their 72-hour contract period. For the first item, participants were asked to indicate from 0-100% the proportion of appearance comparisons for which they implemented their learned strategy as instructed. For the second item, participants provided a rating on a 5-point Likert-type scale ranging from 0 (*Not at all*) to 4 (*Extremely*) to indicate how much effort they had put into implementing their learned strategy as instructed.

Procedure

In-Lab Session

Upon recruitment, participants were scheduled for an in-lab session with a researcher. All in-lab procedures were completed using Qualtrics on a laptop computer in a private room, except for the contract signing portion, which was completed with the researcher on paper.

Questionnaires. Participants first completed baseline measures of the trait-level dependent variables as described above.

Appearance Comparison Induction. Participants listened to a series of audio clips with text accompaniment. The introductory portion of these clips discussed the prevalence of body dissatisfaction and the practice of appearance comparisons. As in Studies 1 and 2, participants were then provided with an example of an upward appearance comparison, such as seeing a picture of an old classmate who now looked much thinner than them.

Next, participants were randomly assigned to make either: 1) a recalled comparison – i.e., to recall a recent occasion on which they compared themselves to someone they believed to be more attractive than they were (conducted similarly to Study 1); or 2) a live comparison – i.e., log onto their personal Instagram account and select an image from their feed posted by a woman they personally knew (conducted similarly to Study 2). We specified the criterion of personally knowing the woman they compared themselves to keep the type of comparison target relatively constant across participants. Moreover, we felt it would be easier for participants to employ either strategy – whether they were cultivating compassion or generating non-appearance domains of superiority – towards someone they knew than someone they did not. Participants were then guided through making an unfavourable appearance comparison to their selected target.

Experimental Manipulation. Participants were then randomly assigned to either the Caregiving or Competition intervention conditions, which were conducted in the same way as described in Studies 1 and 2. For the Caregiving intervention, participants were first introduced to the compassion-based, caregiving mentality; and then taught to shift away from perceiving their appearance comparison target as a competitor and instead as a fellow human being towards whom they could generate caring thoughts and feelings. Specifically, participants in this condition were asked to recall a time they felt compassion for another person or animal and then

redirect that to their appearance comparison target. For the Competition intervention, participants were taught to make favourable comparisons in non-appearance domains to their appearance comparison target. Specifically, participants in this condition were asked to focus their attention on characteristics, abilities, or accomplishments that made them feel superior to their comparison target.

Contract Signing. Finally, participants were asked to sign a written contract with the researcher committing to employ their assigned self-help strategy for the next 72 hours whenever they made an upward appearance comparison to another woman. This contract protocol has been used successfully in previous experimental work (e.g., Boone et al., 2012; Vimalakanthan et al., 2018). Two copies of the contract were signed in order to increase credibility and compliance, with one copy being retained by the researcher and the other retained by the participant. Furthermore, participants were also given 5 minutes after signing the contract to generate examples of opportunities that they anticipated in the next 72 hours to employ the strategy, along with the specifics of how they might do so (Gollwitzer, 1999). A few examples were presented on the contracts as prompts. In the interest of confidentiality, this portion of the contract was completed privately by the participant on their copy and was not checked by the researcher.

Questionnaires. At the mid-point and end of each participant's 72-hour contractual period, they received a link to a battery of questionnaires consisting of the state- and trait-level dependent variables mentioned above.

Results

Analytic Strategy

All analyses were conducted using PROC MIXED in SAS 9.4 (SAS Institute, 2012). Multilevel modeling (MLM) with maximum likelihood estimation was used, as it is the recommended approach when multiple observations are collected from each participant. MLM is an advantageous analytical strategy in being able to retain data from participants for whom observations are missing at random (Little, 1995; Singer & Willett, 2003), as was the case in this data set.

Typically, each model included a fixed-effects portion including Time, Intervention, and Intervention x Time; and a random-effects portion which included a random intercept and an unstructured error covariance structure. All significant Time x Intervention interactions were probed by computing and comparing slope estimates, representing rates of change in the dependent variable, between the two interventions.

For in-lab analyses, three stepwise multilevel models were examined, as there were two different condition categories. Model 1 included a fixed-effects portion including Time, Intervention, and (Comparison) Context; and a random-effects portion which included a random intercept and an unstructured error covariance structure. Model 2 included a fixed-effects portion including Time, Intervention, (Comparison) Context, and two-way interaction terms (i.e., Time x Context, Time x Intervention); and a random-effects portion which included a random intercept and an unstructured error covariance structure. Model 3 included a fixed-effects portion including Time, Intervention, (Comparison) Context; two-way interaction terms (i.e., Time x Context, Time x Intervention, Context x Intervention); a three-way interaction term (i.e., Time x

Context x Intervention); and a random-effects portion which included a random intercept and an unstructured error covariance structure. All significant interactions were probed by computing and comparing slope estimates, representing rates of change in the dependent variable, between the two interventions.

Missing Data

Of the 172 participants in our final sample, 33 failed to complete mid-intervention measures: this included 25 out of 85 from the Caregiving condition, and 18 out of 88 from the Competition condition. A chi-square test indicated that attrition rates were not significantly different between conditions, $X^2 = 1.82, p = .18$. Another 58 of these participants failed to complete post-intervention measures: this included 32 out of 85 from the Caregiving condition, and 26 out of 88 from the Competition condition. A chi-square test indicated that attrition rates were not significantly different between conditions, $X^2 = 1.27, p = .26$.

Little's MCAR (missing completely at random) test was used to analyze patterns of missing data in the sample (Little, 1995). A significant chi-square (i.e., $p < .05$) from this analysis would suggest that the pattern of missing data was *not* MCAR, $X^2(2020) = 2127.91, p = .047$, as it fell marginally beneath the threshold for statistical non-significance (i.e., $p > .05$). In longitudinal studies with small samples (i.e., $N < 200$), when data cannot be assumed to be MCAR, it is recommended to use maximum likelihood estimation to handle the missing data as opposed to other analytic procedures, such as multiple imputation (e.g., Shin et al., 2016; von Hippel, 2016; Yuan et al., 2012). Maximum likelihood estimation allows researchers to retain all participant data by using the available data to estimate the parameters of the model (Snijders & Bosker, 2012).

A Note on Correcting for Multiple Comparisons

A natural question that may arise with respect to the sizable amount of statistical significance tests conducted in this study is the extent to which effects found to be significant are reflective of Type I error – that is, incorrect rejection of the null hypothesis. A number of *alpha-adjustment* procedures exist that allow for the correction of Type I error, termed thus because they generally involve lowering the alpha level below its standard .05 to a more conservative threshold for significance (Keppel, 1991). One popularly employed example of these is the Bonferroni method, in which the corrected alpha level is derived by dividing the desired overall alpha level by the number of tests to be performed (Abdi, 2007). A more recent method that has arisen as a preferred alternative to Bonferroni correction is that of false discovery rate (FDR) control, in which the corrected alpha level is only derived by/applied to tests that are declared to be significant (Glickman et al., 2014). Generally, the rationale for alpha-adjustment is that the alpha level must be adjusted in concordance with the number of significance tests to avoid capitalizing on effects found by chance.

However, O’Keefe (2003) makes a convincing case against alpha-adjustment procedures, arguing that they: 1) diminish statistical power; and 2) are grounded on a flawed and inconsistently applied principle that attempts to localize Type I error. First, to set a lower alpha level is to reduce one’s chances of detecting a true significant effect, and while this reduction in power alone is by no means a cogent argument against alpha-adjustment, it does stand as a disadvantage in studies such as the present one that are designed with the goal of exploring associations between several variables at multiple levels. Second, in delineating a ‘family’ of tests for which adjustment is required, alpha-adjustment procedures inappropriately localize Type I error, simply because there is no justifiable manner in which ‘capitalizing on chance’ can

be localized. In fact, O’Keefe (2003) argues that the risk of Type I error commission is by its very nature unable to be localized, whether by data set, researcher, time, or by any other grouping, and is in fact “diffused across the research enterprise; it is just the cost of doing business” (p. 438). In considering the present study then, in which my various analyses, despite coming from the same data set are arguably grouped into different ‘families’ and were spread out over time, alpha adjustment would be relatively arbitrary and therefore questionable. While O’Keefe (2003) allows for the possibility that a researcher may *elect* to use more conservative alpha levels – for example, if one’s results may form the basis of a public policy decision or a medical intervention – he reiterates that such a decision can not possibly be justified by the sheer number of tests being conducted. I would argue that although the current study presents a number of theoretical and clinical implications based on its findings, its scope does not necessitate the stringent statistical criteria that might be required in high-stakes contexts such as those described by O’Keefe (2003).

Although FDR control approaches have the practical advantage over Bonferroni corrections in terms of increased power (Glickman et al., 2014), O’Keefe (2007) argues that the problem of inappropriate localization of Type I error still applies. All of this is not to say, however, that Type I error risk is negligible. That such risk is present in proportion with the number of tests conducted, whether one considers Study 3 exclusively or this entire program of research, is a truth that must be acknowledged. However, in agreement with O’Keefe’s (2007) views, my attempt to address this risk in my dissertation is through replication, which is a key aim of this study, and ironically gives rise to its many analyses.

Preliminary Analyses

Zero-Order Correlations

Pearson zero-order correlations were conducted between dependent variables at baseline, as displayed in Table 2.1. The VAS item asking participants about their feelings of connectedness to the target was not administered at baseline (as there was not yet an identified comparison target) and is thus not included in these correlations.

Body image comparison orientation shared moderate positive correlations with dietary restraint, body dissatisfaction (VAS), guilt, and shame; moderate negative correlations with self-compassion (both the SCS-SF and VAS measures), mood, pride, and peace; small positive correlations with feelings of threat, distress, and appearance comparison motivation; and small negative correlations with social safeness, strength, calm, and connectedness to others. Body dissatisfaction (BSQ-16B) shared large positive correlations with body image comparison orientation, dietary restraint, and body dissatisfaction (VAS); a large negative correlation with self-compassion (VAS); moderate positive correlations with distress, guilt, and shame; moderate negative correlations with self-compassion (SCS-SF), social safeness, mood, pride, peace, and connectedness to others; a small positive correlation with feelings of threat; and small negative correlations with strength and calm. Dietary restraint shared moderate negative correlations with self-compassion (SCS-SF) and pride; small positive correlations with feelings of threat, distress, guilt, shame, and appearance comparison motivation; and small negative correlations with social safeness, mood, strength, self-compassion (VAS), and connectedness to others.

Self-compassion (SCS-SF) shared a large positive correlation with self-compassion (VAS); moderate positive correlations with social safeness, mood, pride, strength, peace, and

connectedness to others; moderate negative correlations with body dissatisfaction (VAS), guilt, and shame; a small positive correlation with calm; and small negative correlations with feelings of threat and distress. Social safeness shared large positive correlations with mood and connectedness to others; moderate positive correlations with pride, calm, peace, and self-compassion (VAS); and moderate negative correlations with body dissatisfaction (VAS), feelings of threat, distress, guilt, and shame.

Mood shared a large positive correlation with peace; large negative correlations with body dissatisfaction (VAS) and distress; moderate positive correlations with pride, calm, self-compassion (VAS), and connectedness to others; moderate negative correlations with feelings of threat, guilt, and shame; and a small positive correlation with strength. Body dissatisfaction (VAS) shared a strong negative correlation with self-compassion (VAS); moderate positive correlations with distress and shame; moderate negative correlations with pride, strength, calm, peace, and connectedness to others; and small positive correlations with feelings of threat and guilt. Threatened feelings shared moderate positive correlations with distress, guilt, and shame; moderate negative correlations with calm, peace, and connectedness to others; and a small negative correlation with self-compassion (VAS). Distress shared large positive correlations with guilt and shame; moderate negative correlations with calm and peace; and small negative correlations with pride, self-compassion (VAS), and connectedness to others. Guilt shared a large positive correlation with shame; moderate negative correlations with pride, calm, peace, self-compassion (VAS), and connectedness to others; a small positive correlation with appearance comparison motivation; and a small negative correlation with strength. Shame shared moderate negative correlations with pride, calm, peace, self-compassion (VAS), and connectedness to others; and a small negative correlation with strength. Pride shared large

positive correlations with strength and self-compassion (VAS); moderate positive correlations with peace and connectedness to others; and a small positive correlation with calm. Strength shared a large positive correlation with self-compassion (VAS), moderate positive correlations with calm and peace, and a small positive correlation with connectedness to others. Calm shared a large positive correlation with peace and moderate positive correlations with self-compassion (VAS) and connectedness to others. Finally, self-compassion (VAS) and connectedness to others shared a moderate positive correlation.

Of note, other than the few times it was mentioned above, the appearance comparison motivation variable did not correlate significantly with most of the other variables.

Manipulation Checks

Before testing our primary hypotheses, we also used multilevel modeling to determine whether feelings of compassion and competitiveness increased most over the course of practicing in-lab the Caregiving and Competition strategies, respectively.

There was a significant effect of Time on compassion, $B = 30.36$, $SE = 8.68$, $p < .001$, with all participants reporting an increase in compassion felt towards the target over the course of the intervention. There was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = 75.79$, $SE = 8.75$, $p < .001$, increased feelings of compassion towards the target significantly more so than the Competition condition, $B = 30.36$, $SE = 8.68$, $p < .001$, over the course of the intervention.

There was a significant effect of Time on feelings of competitiveness, $B = -53.68$, $SE = 13.61$, $p < .001$, with all participants reporting a decrease in competitiveness felt towards the target over the course of the intervention. There was a significant Time x Intervention effect,

with slope estimates indicating that the Caregiving intervention, $B = -77.63$, $SE = 9.66$, $p < .001$, decreased feelings of competitiveness towards the target significantly more so than the Competition condition, $B = -23.95$, $SE = 9.59$, $p < .05$, over the course of the intervention.

Intervention Compliance

Mean levels of self-reported compliance were high across conditions for both items. At the midpoint of the contract period, participants in the Caregiving and Competition conditions reported that they had implemented their learned strategy as instructed 80.0% ($SD = 19.3\%$) and 73.2% ($SD = 26.3\%$), respectively, of the time they had made an appearance comparison during the contract period; these did not differ from one another, $t(133) = 1.68$, $p = .09$. At the end of the contract period, participants in the Caregiving and Competition conditions reported that they had respectively implemented their learned strategy as instructed 74.7% ($SD = 28.4\%$) and 67.8% ($SD = 29.1\%$) of the time they had made an appearance comparison during the contract period; these did not differ from one another, $t(116) = 1.29$, $p = .20$. There was also no effect of Time, $B = -1.19$, $SE = 1.24$, $p = .34$, or Intervention x Time, $B = 6.69$, $SE = 3.61$, $p = .07$, on self-reported intervention compliance.

At the midpoint of the contract period, participants in the Caregiving and Competition conditions rated their effort in implementation at 3.52 ($SD = 0.84$) and 3.46 ($SD = 0.93$), out of a possible 4; these did not differ from one another, $t(133) = 0.43$, $p = .67$. At the end of the contract period, participants in the Caregiving and Competition conditions rated their effort in implementation at 3.34 ($SD = 1.00$) and 3.56 ($SD = 1.09$), respectively, out of a possible 4; these did not differ from one another, $t(117) = -1.13$, $p = .26$. There was also no effect of Time, $B = 0.01$, $SE = 0.04$, $p = .84$, or Intervention x Time, $B = -0.04$, $SE = 0.15$, $p = .77$, on reports of effort.

State-Level Outcomes: In-Lab Analyses

These in-lab analyses investigated state-level outcomes of interest measured principally by VASs. VASs measured body dissatisfaction, self-compassion, connectedness to target, connectedness to others in general, appearance comparison motivation, and a number of affective variables (mood, distress, threat, guilt, shame, pride, strength, calm, and peace). One validated instrument measuring body dissatisfaction (BISS) and two modified versions of validated instruments measuring self-compassion (the state revision of the SCS) and social safeness (SSPS) were also included. Two timepoints of administration for these measures were included (Times 2 and 3, as depicted in Fig.1). The following analyses were conducted:

1. **Intervention (Caregiving vs. Competition).** This subset of in-lab analyses examined the momentary changes from post-comparison/pre-intervention to post-intervention, during participants' practice of their randomly-assigned intervention in the lab. These analyses tested Hypothesis 1 stating that the caregiving strategy would have momentary benefits to affective, body-specific, and intra- and interpersonal well-being, as well as comparison motivation, to a greater degree than the competition strategy.
2. **Context of comparison (Live vs. Recalled).** This subset of in-lab analyses examined the momentary changes from post-comparison/pre-intervention to post-intervention, during participants' practice of their randomly assigned intervention in the lab. As per Hypothesis 4, which was exploratory in nature, these analyses investigated how the context of the unfavourable appearance comparison made by participants (i.e., a live vs. recalled comparison) would influence momentary benefits to affective, body-specific, and intra- and interpersonal well-being as well as comparison motivation.

3. **Context x Intervention.** This subset of in-lab analyses examined the momentary changes from post-comparison/pre-intervention to post-intervention, during participants' practice of their randomly assigned intervention in the lab. Again, as per Hypothesis 4, which was exploratory in nature, this subset of in-lab analyses examined how the interaction of context of comparison with intervention condition would influence momentary benefits to affective, body-specific, and intra- and interpersonal well-being as well as comparison motivation. That is, these analyses explored whether there were differences among the four effective in-lab conditions into which participants were randomly assigned: Caregiving-Live, Caregiving-Recall, Competition-Live, and Competition-Recall.

Results below are presented for each outcome of interest in the aforementioned order of in-lab analyses.

Body Dissatisfaction

BISS. Table 2.2 presents coefficients for all fixed effects in the multilevel models predicting state body dissatisfaction as captured by the BISS. There was a significant effect of Time whereby all participants reported decreasing body dissatisfaction over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in state body dissatisfaction experienced over the course of the intervention as practiced in-lab.

VAS Item. Table 2.3 presents coefficients for all fixed effects in the multilevel models predicting state body dissatisfaction as captured by the VAS item. There was a significant effect of Time whereby all participants reported decreasing body dissatisfaction over the course of the intervention. As hypothesized and reported under Model 2, there was a significant Time x

Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = -70.31$, $SE = 6.56$, $p < .001$, decreased body dissatisfaction significantly more so than the Competition intervention, $B = -41.60$, $SE = 6.52$, $p < .001$. No significant effects were found for Time x Context or for the three-way interaction of Time x Context x Intervention. This indicates that the comparison context, or the interaction of context and intervention, did not influence the change in state body dissatisfaction experienced over the course of the intervention as practiced in-lab.

Self-Compassion

State SCS-SF. Table 2.4 presents coefficients for all fixed effects in the multilevel models predicting state self-compassion as captured by the state SCS-SF. There was a significant effect of Time whereby all participants reported increasing self-compassion over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in state self-compassion experienced over the course of the intervention as practiced in-lab.

VAS Item. Table 2.5 presents coefficients for all fixed effects in the multilevel models predicting state self-compassion as captured by the VAS item. There was a significant effect of Time whereby all participants reported increasing self-compassion over the course of the intervention. As hypothesized and reported under Model 2, there was a significant Time x Context effect, with slope estimates indicating that the Recalled comparison context, $B = 81.01$, $SE = 8.62$, $p < .001$, increased self-compassion significantly more so than the Live comparison context, $B = 51.00$, $SE = 8.51$, $p < .001$. No significant effects were found for Time x Intervention or for the three-way interaction of Time x Context x Intervention. This indicates that

the intervention, or the interaction of context and intervention, did not influence the change in state self-compassion experienced over the course of the intervention as practiced in-lab.

Social Safeness/Connectedness

SSPS. Table 2.6 presents coefficients for all fixed effects in the multilevel models predicting state social safeness as captured by the SSPS when participants were oriented to the present moment. There was a significant effect of Time whereby all participants reported increasing social safeness over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in state social safeness experienced over the course of the intervention as practiced in-lab.

Connectedness to Others VAS Item. Table 2.7 presents coefficients for all fixed effects in the multilevel models predicting feelings of connectedness to others in general as captured by the VAS item. There was a significant effect of Time whereby all participants reported increasing connectedness to others over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in feelings of connectedness to others in general experienced over the course of the intervention as practiced in-lab.

Connectedness to Target VAS Item. Table 2.8 presents coefficients for all fixed effects in the multilevel models predicting feelings of connectedness to the target as captured by the VAS item. There was a significant effect of Time whereby all participants reported increasing

feelings of connectedness to the target over the course of the intervention. As hypothesized and reported under Model 2, there was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention increased feelings of connectedness to the target, $B = 55.44$, $SE = 7.23$, $p < .001$, significantly more so than the Competition intervention, $B = 34.05$, $SE = 6.52$, $p < .001$. No significant effects were found for Time x Context or for the three-way interaction of Time x Context x Intervention. This indicates that the comparison contexts, or the interaction of context and intervention, to which participants were assigned did not influence the change in feelings of connectedness to the target experienced over the course of the intervention as practiced in-lab.

Comparison Motivation

Table 2.9 presents coefficients for all fixed effects in the multilevel models predicting appearance comparison motivation as captured by the VAS item. There was a significant effect of Time whereby all participants reported decreasing appearance comparison motivation over the course of the intervention. As hypothesized and reported under Model 2, there was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = -75.83$, $SE = 8.78$, $p < .001$, decreased appearance comparison motivation significantly more so than the Competition intervention, $B = -35.40$, $SE = 8.66$, $p < .001$. No significant effects were found for Time x Context or for the three-way interaction of Time x Context x Intervention. This indicates that the comparison contexts, or the interaction of context and intervention, did not influence the change in appearance comparison motivation experienced over the course of the intervention as practiced in-lab.

Affective VAS Items

Mood. Table 2.10 presents coefficients for all fixed effects in the multilevel models predicting mood. There was a significant effect of Time whereby all participants reported improving mood over the course of the intervention. As hypothesized and reported under Model 2, there was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = 72.56$, $SE = 4.78$, $p < .001$, improved mood significantly more so than the Competition intervention, $B = 54.96$, $SE = 4.73$, $p < .001$. No significant effects were found for Time x Context or for the three-way interaction of Time x Context x Intervention. This indicates that the comparison contexts, or the interaction of context and intervention, did not influence the change in mood experienced over the course of the intervention as practiced in-lab.

Distress. Table 2.11 presents coefficients for all fixed effects in the multilevel models predicting distress. There was a significant effect of Time whereby all participants reported decreasing distress over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in distress experienced over the course of the intervention as practiced in-lab.

Feelings of Threat. Table 2.12 presents coefficients for all fixed effects in the multilevel models predicting feelings of threat. There was a significant effect of Time whereby all participants reported decreasing feelings of threat over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context

or intervention, or the interaction of the two, influenced the change in feelings of threat experienced over the course of the intervention as practiced in-lab.

Guilt. Table 2.13 presents coefficients for all fixed effects in the multilevel models predicting feelings of guilt. There was a significant effect of Time whereby all participants reported decreasing guilt over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in feelings of guilt experienced over the course of the intervention as practiced in-lab.

Shame. Table 2.14 presents coefficients for all fixed effects in the multilevel models predicting feelings of shame. There was a significant effect of Time whereby all participants reported decreasing shame over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for the three-way interaction of Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in feelings of shame experienced over the course of the intervention as practiced in-lab.

Pride. Table 2.15 presents coefficients for all fixed effects in the multilevel models predicting feelings of pride. There was a significant effect of Time whereby all participants reported increasing pride over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in feelings of pride experienced over the course of the intervention as practiced in-lab.

Strength. Table 2.16 presents coefficients for all fixed effects in the multilevel models predicting feelings of emotional strength. There was a significant effect of Time whereby all participants reported increasing strength over the course of the intervention. No significant effects were found for Time x Context, Time x Intervention, or for Time x Context x Intervention. This indicates that neither the comparison context or intervention, or the interaction of the two, influenced the change in feelings of emotional strength experienced over the course of the intervention as practiced in-lab.

Calm. Table 2.17 presents coefficients for all fixed effects in the multilevel models predicting feelings of calm. There was a significant effect of Time whereby all participants reported increasing calmness over the course of the intervention. As hypothesized and reported under Model 2, there was a significant Time x Context effect, with slope estimates indicating that the Recalled comparison context, $B = 66.62$, $SE = 9.46$, $p < .001$, increased feelings of calm significantly more so than the Live comparison context, $B = 39.15$, $SE = 9.35$, $p < .001$. As hypothesized and reported under Model 2, there was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = 69.72$, $SE = 9.46$, $p < .001$, improved feelings of calm significantly more so than the Competition intervention, $B = 36.05$, $SE = 9.35$, $p < .001$. No significant effect was found for the three-way interaction of Time x Context x Intervention. This indicates that the interaction of context and intervention did not influence the change in feelings of calm experienced over the course of the intervention as practiced in-lab.

Peace. Table 2.18 presents coefficients for all fixed effects in the multilevel models predicting feelings of peace. There was a significant effect of Time whereby all participants reported increasing feelings of peace over the course of the intervention. As hypothesized and

reported under Model 2, there was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = 86.52$, $SE = 8.04$, $p < .001$, increased feelings of peace significantly more so than the Competition intervention, $B = 42.87$, $SE = 12.97$, $p = .001$. No significant effect was found for Time x Context. This indicates that the comparison context did not influence the change in feelings of peace experienced over the course of the intervention as practiced in-lab. Due to a study error in which this item was not administered to participants in the Competition x Recalled condition, the three-way interaction of Time x Context x Intervention could not be computed.

State-Level Outcomes: Longitudinal Analyses Examining Sustainability of Effects

These longitudinal analyses investigated state-level outcomes of interest measured principally by VASs. VASs measured body dissatisfaction, self-compassion, connectedness to target, connectedness to others in general, appearance comparison motivation, and a number of affective variables (mood, distress, threat, guilt, shame, pride, strength, calm, and peace). One validated instrument measuring body dissatisfaction (BISS) was also included. Three timepoints of administration for these measures were included (Times 3, 4, and 5, as depicted in Fig.1): post-intervention (i.e., the end of the lab session), the contract period midpoint, and the contract period endpoint (i.e., the end of the study). That is, these analyses examined the sustainability of state-level changes throughout the contract period. These analyses tested Hypothesis 2 stating that the caregiving strategy would sustain its momentary benefits to affective, body-specific, and intra- and interpersonal well-being, as well as comparison motivation, to a greater degree throughout the contract period than the competition strategy. Table 2.19 presents coefficients for all fixed effects in the multilevel models run for these outcome variables.

Body Dissatisfaction

BISS. There was a significant effect of Time on state body dissatisfaction as captured by the BISS, whereby all participants reported decreasing body dissatisfaction over the course of the contract period. No significant effect of Time x Intervention was found, indicating that the intervention did not influence the change in state body dissatisfaction experienced over the course of the contract period.

VAS Item. Similarly, there was a significant effect of Time on state body dissatisfaction as captured by the body dissatisfaction VAS item, whereby all participants reported decreasing body dissatisfaction over the course of the contract period. No significant effect of Time x Intervention was found, indicating that the intervention did not influence the change in state body dissatisfaction experienced over the course of the contract period.

Self-Compassion

There was no significant effect of Time on self-compassion as captured by the VAS item. No significant effect of Time x Intervention was found, indicating that the intervention did not influence any changes in self-compassion experienced over the course of the contract period.

Connectedness to Others

There was no significant effect of Time on feelings of connectedness to others in general as captured by the VAS item. No significant effect of Time x Intervention was found, indicating that the intervention did not influence any changes in feelings of connectedness to others in general experienced over the course of the contract period.

Comparison Motivation

There was no significant effect of Time on appearance comparison motivation as captured by the VAS item. No significant effect of Time x Intervention was found, indicating that the intervention did not influence any changes in appearance comparison motivation experienced over the course of the contract period.

Affective VASs

There was no significant effect of Time on any of the affective VAS items (i.e., mood, distress, threat, guilt, shame, pride, strength, calm, peace). Nor were any significant effects of Time x Intervention found, indicating that the interventions did not influence any affective changes experienced over the course of the contract period.

Trait-Level Outcomes: Longitudinal Analyses

These longitudinal analyses investigated trait-level outcomes of interest as measured by validated instruments but reworded to orient participants to the time period that had elapsed since the preceding assessment point: body dissatisfaction (BSQ-16b), restrained eating (EDE-Q), body image comparisons (BEECOM), self-compassion, (SCS-SF), and social safeness (SSPS). Three timepoints of administration for these measures were included (Times 1a, 4, and 5 as depicted in Fig.1): baseline (i.e., Time 1a at the start of the study), the contract period midpoint (Time 4), and the contract period endpoint (i.e., Time 5 at the end of the study). These analyses tested Hypothesis 3 that the caregiving strategy would ultimately be more beneficial to body-specific and both intrapersonal and interpersonal well-being over the long-term than the competition strategy. Table 2.20 presents coefficients for all fixed effects in the multilevel models run for these outcome variables.

Body Dissatisfaction

There was a significant effect of Time on trait body dissatisfaction as captured by the BSQ-16b, whereby all participants reported decreasing body dissatisfaction from baseline to the end of the study. No significant effect of Time x Intervention was found, indicating that the intervention did not influence the change in body dissatisfaction throughout this period.

Restrained Eating

There was a significant effect of Time on restrained eating as captured by the EDEQ Dietary Restraint subscale, whereby all participants reported decreasing restrained eating from baseline to the end of the study. No significant effect of Time x Intervention was found, indicating that the intervention did not influence the change in restrained eating throughout this period.

Body Image Comparisons

There was a significant effect of Time on body image comparisons as captured by the BEECOM, whereby all participants reported decreasing body image comparison orientation from baseline to the end of the study. As hypothesized, there was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = -7.79$, $SE = 0.64$, $p < .001$, decreased body image comparison orientation significantly more so than the Competition intervention, $B = -5.72$, $SE = 0.57$, $p < .001$, throughout this period.

Self-Compassion

There was a significant effect of Time on self-compassion as captured by the SCS-SF, whereby all participants reported increasing self-compassion from baseline to the end of the

study. No significant effect of Time x Intervention was found, indicating that the intervention did not influence the change in self-compassion throughout this period.

Social Safeness

There was a significant effect of Time on social safeness as captured by the SSPS, whereby all participants reported increasing social safeness from baseline to the end of the study. As hypothesized, there was a significant Time x Intervention effect, with slope estimates indicating that the Caregiving intervention, $B = 0.10$, $SE = 0.02$, $p < .001$, increased social safeness significantly more so than the Competition intervention, $B = 0.04$, $SE = 0.02$, $p < .05$, throughout this period.

Summary of Findings

Table 2.21 presents a graphical summary of statistically significant effects that were found for all analyses presented above.

Discussion

As with Studies 1 and 2, this final study investigated whether the adoption of a caregiving mentality after engaging in an unfavourable appearance comparison may be more beneficial than the adoption of a competitive mentality to participants' affective and body-specific well-being, comparison motivation, and relationships with self and others. Notably, this study also directly compared the effects of comparison context – i.e., a live vs. recalled comparison – on outcomes, especially the moderating influence of this factor on the interventions' effects. First, in a one-hour lab session with a 2x2 design, a sample of diverse college women was randomly assigned to either recall a recent unfavourable appearance comparison or to make a 'live' one to a target they selected from their personal Instagram feed, and then were guided through the application of a

randomly assigned intervention. The caregiving intervention, which involved cultivating a compassionate, caregiving orientation towards the target of the comparison, was compared to the competition intervention, which involved making downward comparisons on non-appearance domains with the target of the comparison. After the lab session, participants committed to practicing their learned intervention whenever they made an unfavourable appearance comparison during a 72-hour contractual period.

State-Level Findings

Momentary Benefits

Hypothesis 1 proposed that the caregiving intervention would be more beneficial than the competition intervention to participants' momentary affective, body-specific well-being, comparison motivation, and their relationships with themselves and others. Partial support for my hypothesis was obtained when examining the affective variables of mood, calm, and peace; as well as body dissatisfaction (VAS item), connectedness to target, and appearance comparison motivation. However, from pre- to post-intervention in the lab, participants across both intervention conditions reported momentary benefits for all outcomes of interest.

With respect to the affective variables of interest, participants in the Caregiving condition reported improved mood and greater feelings of calmness and peacefulness than those in the Competition condition. These relative momentary benefits of the caregiving practice align with the theory that cultivating a caregiving mentality activates the soothing system which is associated with low-arousal forms of positive affect (Gilbert, 2009). Participants in the Caregiving condition also reported greater decreases in body dissatisfaction than their counterparts in the Competition condition. However, this finding should be interpreted with

caution given that it was only reflected in the unvalidated body dissatisfaction VAS item but not in the validated BISS measure. Furthermore, participants in the Caregiving condition reported decreased state motivation to make appearance comparisons relative to those in the other conditions. This is consistent with Study 1, and a promising finding even if it only reflects a momentary motivation to change harmful behaviour (Leahey et al., 2007). Finally, the Caregiving condition also resulted in greater feelings of connectedness to participants' comparison target. This is an expected finding, given that the caregiving intervention involves shifting away from the competitive mentality that perpetuates appearance comparisons, and supports the theory that cultivating compassion even briefly can leave women feeling more connected to someone whom just minutes earlier was viewed as a social threat.

Because the caregiving intervention only outperformed the competition intervention with respect to its effects on affect, body dissatisfaction, connectedness (to target), and appearance comparison motivation, this approach to dealing with appearance comparisons may not be uniformly superior, in the moment, to one that involves making a downward comparison to the target. However, the relative advantages observed, in conjunction with previous research proposing that overreliance on a competitive mentality can be harmful to well-being (e.g., Leahey et al., 2007; Lin & Soby, 2016), offer tentative support for my theory that cultivating compassion towards other women may be a more beneficial momentary approach than making compensatory favourable comparisons when facing an unfavourable appearance comparison.

Comparison Context and its Interaction with Intervention

Another set of hypotheses were posited that also concerned momentary benefits but focused on the context of the unfavourable appearance comparison initially made by participants. Hypothesis 2a explored whether the live or recalled nature of this comparison would influence

momentary benefits to affective and body-specific well-being, comparison motivation, and participants' relationship with themselves and others. From pre- to post-intervention in the lab, participants across both comparison context conditions reported momentary benefits for all outcomes of interest. Of note, the recalled comparison context appeared to demonstrate a couple of advantages over the live comparison context. Regardless of the particular intervention strategy they practiced (i.e., caregiving vs. competition), participants who intervened with a recalled unfavourable appearance comparison experienced increased feelings of self-compassion (only as captured by the VAS item) and feelings of calmness relative to those who had intervened with a live unfavourable appearance comparison. However, given that these findings are based entirely on two VAS items, this exploratory hypothesis requires much further inquiry.

Hypothesis 2b sought to explore the moderating role of comparison context on the interventions' momentary effects on outcomes of interest. No significant three-way interactions were found – that is, comparison context did not interact with intervention to influence any changes experienced by participants from pre- to post-intervention in the lab. This suggests that in the moment, the relative effects of practicing caregiving toward the target of an unfavourable appearance comparison versus comparing oneself favourably to then in non-appearance domains should be the same whether an individual is working with a live or recalled appearance comparison.

Sustainability of Momentary Benefits

Hypothesis 3 posited that the caregiving intervention would demonstrate greater sustainability of momentary benefits than the competition intervention throughout the contract period. When examining scores on outcome variables from the time participants left the lab to the end of the 72-hour contract period, there were generally no effects of time; this may suggest

that the momentary effects of the interventions were generally sustained over time. In the case of body dissatisfaction, as measured by both the BISS and the VAS, a significant negative effect of Time emerged revealing that across conditions, body dissatisfaction continued to decrease over the contract period. The absence of Condition x Time effects for all outcome variables reveals that the intervention to which participants were assigned did not affect their trajectories over the 72 hours. Therefore, although scores on outcome variables did not worsen and in some cases improved over the contract period, these patterns did not differ as a function of whether participants were in the Caregiving or Competition condition. Hypothesis 3, as a result, was not supported.

Trait-Level Findings

One remaining hypothesis pertained to the trait-level benefits potentially offered by deploying the two different interventions over a three-day contract period. Hypothesis 4 posited that, from before learning the strategy to the end of the contract period, the caregiving intervention would ultimately yield more benefits than the competition intervention to participants' body-specific well-being and their relationship with themselves and others. From baseline (i.e., the start of the lab session) to the end of the contract period, all participants saw reductions in trait body dissatisfaction, trait restrained eating, and trait body image comparison orientation as well as increases in trait self-compassion and trait social safeness, suggesting that either intervention may be helpful in these respects in the face of day-to-day unfavourable appearance comparisons. However, participants practicing the caregiving intervention reported significantly decreased body image comparison orientation and increased feelings of social safeness compared to those practicing the competition intervention. These results suggest that women who repeatedly adopt a caregiving mentality in response to encountering an unfavourable

appearance comparison in the course of their daily lives – at least over the 72-hour contract period – come to make fewer comparisons related to their body, eating, and exercise, and feel more safe and secure in their social environment, compared to women who rely on the competitive mentality. Hypothesis 4 was therefore partially supported.

Summary of Results

Participants guided through an in-lab intervention to address the harms of an unfavourable appearance comparison, regardless of condition, reported momentary decreases in negative affect, body dissatisfaction, and appearance comparison motivation; and increases in positive affect, self-compassion, and social safeness/connectedness. However, for a few outcomes of interest, participants who practiced the caregiving intervention reported significantly greater advantages over those who practiced the competition intervention: these included improved mood, increased feelings of calmness and peacefulness, decreased body dissatisfaction and motivation to make appearance comparisons, and greater feelings of connectedness to the comparison target. These momentary benefits were generally sustained over the 72-hour contract period; levels of body dissatisfaction additionally continued to decrease throughout this time. Otherwise, the intervention to which participants had been assigned did not influence changes in momentary outcomes over this period. In terms of trait-level outcomes, participants across conditions reported decreases in body dissatisfaction, restrained eating, and body image comparison orientation, as well as increases in self-compassion and social safeness over the course of the 72-hour contract period. Participants who practiced the caregiving intervention during this time, however, saw significantly greater reductions in body image comparison orientation and significantly increased feelings of social safeness compared to those who practiced the competitive intervention.

Finally, this study also preliminarily explored the effects of comparison context as well as its potential moderation of the intervention effects on momentary benefits to participants' well-being. Regardless of whether they made a live or recalled unfavourable appearance comparison, participants reported momentary benefits across the intervention conditions to all outcomes of interest. Participants who intervened with a recalled unfavourable appearance comparison, however, reported increased feelings of self-compassion (as captured by the VAS item) and calmness compared to those who intervened with a live comparison. Comparison context did not interact with intervention to influence any changes experienced by participants on outcomes of interest.

Theoretical and Practical Implications

Findings from the present study partially replicate and build on earlier work in this program of research, lending value to a social mentality theory perspective on the problem of appearance comparisons. Results demonstrate the momentary and longitudinal value of adopting a compassionate, care-based orientation towards those initially perceived as social threats – adding to a flourishing body of research demonstrating the benefits of compassion for self and others on one's physical, psychological, and social well-being (e.g., Brown et al., 2003; Cosley et al., 2010; Ferreira et al., 2013; Hutcherson et al., 2008; Neff et al., 2007; Neff & Pommier, 2013), and underlining the potential value of such an orientation in the body image domain in particular. Although many of the observed effects were momentary, this study demonstrates that repeated practice may translate to slightly longer-term benefits in decreasing body dissatisfaction, women's orientation towards making body image comparisons, and increasing their social safeness. This study was also the first to explore the influence of comparison context

on momentary benefits to participants' well-being which is an interesting and understudied aspect of appearance comparisons, and social comparisons in general.

From a more practical standpoint, findings reinforce the benefit of teaching women how to cope with unfavourable appearance comparisons and their harms in some manner, whether by adopting a compassionate mentality towards the targets of their comparisons, or making favourable comparisons towards targets in non-appearance domains. Although the caregiving intervention did not outperform the competition intervention for all outcomes, it did appear to offer a few practical advantages. Promisingly, this study suggests that taking the compassionate approach can arrest the vicious cycle of comparisons in which women are entrenched – by decreasing both their self-reported momentary motivation to make further appearance comparisons, and over time, their predisposition to make body image comparisons. Clinicians and intervention programs working with individuals with body dissatisfaction and/or eating disorders could gauge the extent to which their clients make appearance comparisons and teach them the caregiving intervention to target not only body-specific outcomes such as body dissatisfaction and restrained eating, but also more generally their affect, comparison motivation, self-compassion, and social safeness as well as connectedness to others.

As in previous studies in this program of research, as well as my Master's study, which was similar in design to Study 3, for some outcomes, the strategy of making favourable non-appearance comparisons appeared just as beneficial in intervening with unfavourable appearance comparisons. Notably, though, Study 3 demonstrated that participants who practiced the caregiving intervention saw significantly greater reductions in body image comparison orientation, which was a divergent finding from my Master's work in which intervention had no effect on this outcome (Vimalakanthan et al., 2018). However, the caveat still stands that more

research is needed to determine the long-term effects of using this strategy grounded in the competitive mentality. Practitioners teaching this intervention to their clients must use it with caution to avoid fostering overreliance and inadvertently increasing social comparison orientation.

Limitations and Future Directions

This study had several limitations that could be addressed in future research. First, study participation was limited to women. This recruitment decision was made on the basis of earlier work in the field of appearance comparisons demonstrating that women engage in unfavourable appearance comparisons more frequently and are thus more impacted in terms of body image (Strahan et al., 2006; Thomas & Heinberg, 1993). Nevertheless, men also engage in appearance comparisons, and future research examining the relative efficacy of the caregiving and competition interventions to this population will be valuable. Given the differing sociocultural norms experienced by men and women, perhaps the competition intervention may work better for this population. The study was also limited to a relatively young university population; future work should investigate the two interventions and their relative efficacy among older populations, and broaden the scope of study to community-based and clinical settings.

Second, this study's reliance on self-report measures presents a limitation, especially for the contractual period portion of the study, during which participants were not in the same lab setting as the initial portion of the study and may have been otherwise distracted or not as fully engaged. Future research could include more objective measures such as behavioural tasks, especially those that are validated, to address these concerns.

Third, the longitudinal portion of this study used a previously established contract paradigm (e.g., Boone et al., 2012, Vimalakanthan et al., 2018), which, while advantageous in allowing for an investigation of the self-help practices in a more naturalistic context, ultimately leaves open the question of participant compliance. That is, I was unable to ensure whether participants actually employed the strategy in response to unfavourable appearance comparisons and did so accurately. Future research could combine the contract paradigm with a more structured approach such as a daily diary paradigm – for example, tasking participants with practicing the strategy on a daily basis during the contract period in addition to collecting live information about when they use it naturally in the course of their day.

Fourth, this study was conducted over a relatively short duration, with the contract period lasting only 72 hours. A longer contract period in future research (e.g., one to two weeks) may help participants become more familiar with their assigned intervention, and consequently, more fully benefit from its effects. This may be especially true of the Caregiving intervention, which may have been a novel approach for many of the participants to whom it was assigned. Extending the duration of the study would also hopefully shed further light on the sustainability of the two interventions and their effects over time through subsequent follow-ups. Perhaps these findings could be even further strengthened through the incorporation of a within-persons study design, in which participants get the opportunity to try out both interventions over the course of the study, rather than being randomly assigned only to one of the two interventions.

Conclusion

This study reinforces earlier research applying a social mentality theory perspective to intervene with appearance comparisons and their harms and highlights the benefits of adopting a caregiving mentality towards the targets of one's unfavourable comparisons, both at a

momentary and longitudinal level. Findings suggest that intervening in the aftermath of an unfavourable appearance comparison can be beneficial to well-being, whether that is by cultivating an orientation of care and compassion towards the comparison target or making downward or favourable comparisons towards the target in non-appearance domains. Results additionally suggest that relative to the downward comparison strategy, cultivating compassion towards comparison targets may have a few significant momentary advantages for women's affect, body dissatisfaction, appearance comparison motivation, and connectedness; furthermore, such a mentality leads to more significant long-term reductions in body image comparison orientation and increased feelings of social safeness. Finally, in its preliminary exploration of the effects of comparison context on momentary benefits to participant well-being, initial results suggested that participants who intervened with a recalled unfavourable appearance comparison reported increased feelings of self-compassion and calmness. Comparison context did not interact with intervention condition to influence changes in any outcomes of interest.

Figure 1.

Study Flow

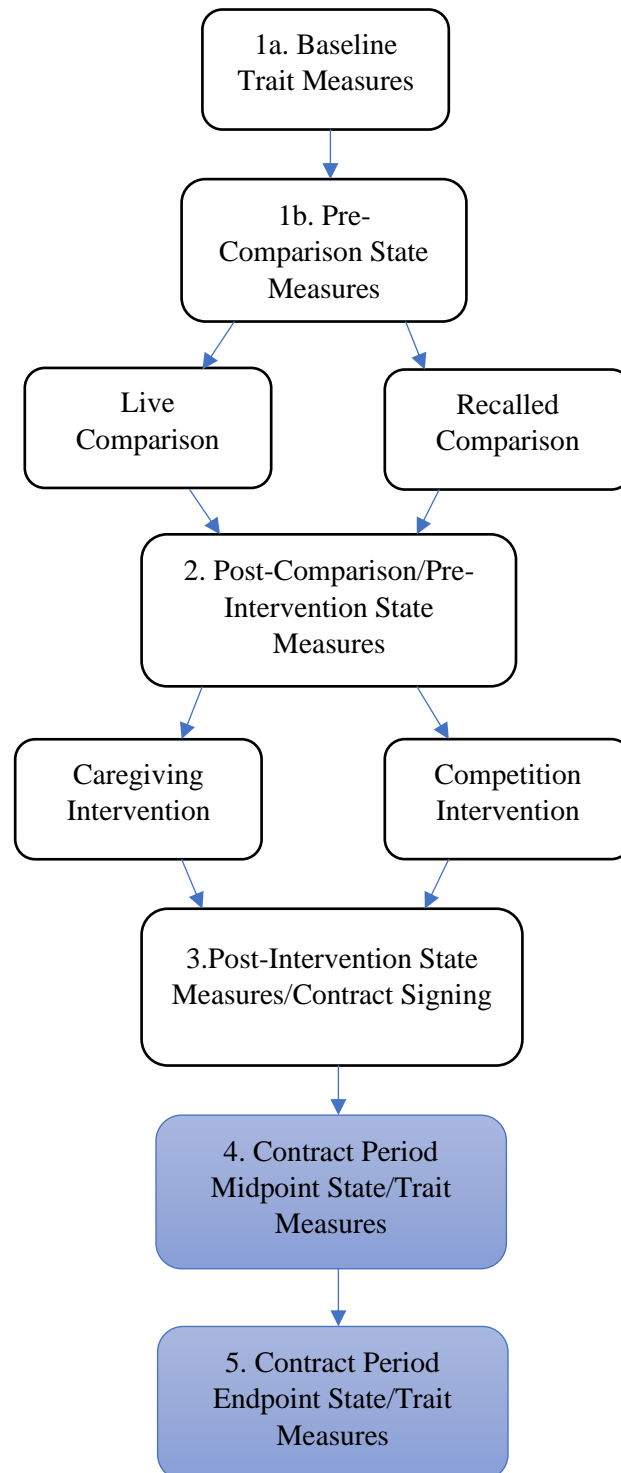


Table 2.1*Correlations between Dependent Variables at Baseline*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10	11.	12.	13.	14.	15.	16.	17.
1. BIC	--																
2. BD-BSQ	.58***	--															
3. RE	.48***	.62***	--														
4. SCS-SF	-.45***	-.47***	-.35***	--													
5. SS	-.24**	-.38***	-.19*	.46***	--												
6. Mood	-.33***	-.46***	-.19*	.38***	.56***	--											
7. BS-V	.38***	.70***	.42***	-.46***	-.45***	-.61***	--										
8. Threat	.22**	.26***	.17*	-.24**	-.37***	-.38***	.22**	--									
9. Distress	.24**	.47***	.20**	-.25**	-.38***	-.55***	.38***	.49***	--								
10. Guilt	.36***	.36***	.20**	-.38***	-.37***	-.35***	.24**	.46***	.56***	--							
11. Shame	.38***	.48***	.24**	-.42***	-.38***	-.47***	.40***	.46***	.50***	.74***	--						
12. Pride	-.37***	-.44***	-.30***	.48***	.35***	.42***	-.46***	-.12	-.18*	-.30***	-.34***	--					
13. Strength	-.23**	-.29***	-.19*	.32***	.26***	.28***	-.30***	-.06	-.11	-.15*	-.18*	.58***	--				
14. Calm	-.18*	-.23**	-.03	.26***	.30***	.46***	-.35***	-.37***	-.34***	-.30***	-.39***	.29***	.32***	--			
15. Peace	-.29***	-.38***	-.10	.43***	.46***	.65***	-.48***	-.38***	-.43***	-.41***	-.49***	.43***	.38***	.75***	--		
16. ACM	.24**	.15	.24**	-.14	.00	-.05	.12	.01	.13	.17*	.13	-.02	.10	.07	-.00	--	
17. SC-V	-.36***	-.54***	-.26***	.52***	.43***	.45***	-.54***	-.17*	-.26***	-.29***	-.39***	.62***	.51***	.42***	.57***	.07	--
18. CO	-.27***	-.33***	-.17*	.34***	.68***	.49***	-.40***	-.30***	-.28***	-.26***	-.32***	.37***	.23**	.40***	.43***	.02	.45***

Note. BIC = Body Image Comparisons (BEECOM); BD-BSQ = Body dissatisfaction (BSQ-16B); RE= Restrained Eating (EDE-Q); SCS-SF= Self-compassion Scale (SCS-SF); SS= Social Safeness (SSPS); BD-V= Body dissatisfaction (VAS measure); ACM = Appearance Comparison Motivation; SC-V = Self-compassion (VAS measure); CO = Connectedness to Others

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.2*Fixed Effect Estimates for Multilevel Models Predicting State Body Dissatisfaction (BISS)*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	6.89***	0.20	6.92***	0.26	6.92***	0.30
Time	-30.02***	2.59	-30.64***	4.47	-29.85***	5.16
Context	0.08	0.19	-0.14	0.30	-0.15	0.43
Intervention	0.06	0.19	0.22	0.30	0.21	0.43
Time x Context			4.77	5.17	3.19	7.28
Time x Intervention			-3.60	5.17	-5.21	7.33
Context x Intervention					0.02	0.60
Time x Context x Intervention					3.18	10.34

Note. *Bs* represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.3*Fixed Effect Estimates for Multilevel Models Predicting State Body Dissatisfaction (VAS)*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	98.49***	0.34	97.81***	0.45	97.45***	0.52
Time	-55.87***	4.75	-40.78***	8.05	-36.88***	9.31
Context	0.15	0.30	0.22	0.51	0.93	0.72
Intervention	0.36	0.30	1.66**	0.51	2.39**	0.73
Time x Context			-1.63	9.25	-9.24	13.01
Time x Intervention			-28.71**	9.24	-36.64**	13.23
Context x Intervention					15.33	18.45
Time x Context x Intervention					3.18	10.34

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.4*Fixed Effect Estimates for Multilevel Models Predicting State Self-Compassion (SCS-SF)*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	2.63***	0.13	2.58***	0.17	2.62***	0.20
Time	23.04***	1.76	24.04***	3.04	24.52***	3.51
Context	-0.04	0.12	0.14	0.20	0.07	0.28
Intervention	-0.08	0.12	-0.17	0.20	-0.24	0.28
Time x Context			-3.98	3.51	-4.91	4.94
Time x Intervention			2.04	3.51	1.08	5.00
Context x Intervention					0.15	0.39
Time x Context x Intervention					1.90	7.02

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.5*Fixed Effect Estimates for Multilevel Models Predicting State Self-Compassion (VAS)*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	1.05**	0.39	0.72	0.55	0.90	0.63
Time	65.78***	6.20	73.05***	10.51	73.81***	12.13
Context	0.06	0.32	1.42*	0.63	1.05	0.89
Intervention	-0.22	0.32	-0.95	0.63	-1.32	0.90
Time x Context			-30.01*	12.12	-31.35	17.12
Time x Intervention			15.91	12.12	14.46	17.25
Context x Intervention					0.74	1.26
Time x Context x Intervention					2.78	24.23

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.6*Fixed Effect Estimates for Multilevel Models Predicting State Social Safeness*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	2.86***	0.13	2.83***	0.15	2.81***	0.17
Time	11.22***	1.14	12.02***	1.96	12.33***	2.27
Context	-0.06	0.14	0.06	0.17	0.10	0.24
Intervention	-0.13	0.14	-0.18	0.17	-0.13	0.24
Time x Context			-2.69	2.27	-3.31	3.19
Time x Intervention			1.14	2.27	0.51	3.23
Context x Intervention					-0.09	0.34
Time x Context x Intervention					1.25	4.54

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.7*Fixed Effect Estimates for Multilevel Models Predicting State Connectedness to Others*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	3.96***	0.39	3.90***	0.49	3.93***	0.57
Time	29.80***	4.90	31.08***	8.44	31.75***	9.76
Context	0.07	0.36	0.63	0.57	0.59	0.80
Intervention	-0.28	0.36	-0.75	0.57	-0.80	0.81
Time x Context			-12.52	9.73	-13.83	13.71
Time x Intervention			10.25	9.72	8.92	13.88
Context x Intervention					0.09	1.14
Time x Context x Intervention					2.62	19.45

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.8*Fixed Effect Estimates for Multilevel Models Predicting State Connectedness to Target*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	1.58***	0.38	2.27***	0.50	2.05***	0.57
Time	44.66***	5.16	29.24***	8.77	34.11***	10.08
Context	-0.54	0.35	-0.97 ^t	0.58	-0.52	0.81
Intervention	0.14	0.35	-0.82	0.58	-0.36	0.82
Time x Context			9.61	10.17	-0.11	14.25
Time x Intervention			21.40*	10.17	11.42	14.43
Context x Intervention					-0.91	1.15
Time x Context x Intervention					19.70	20.28

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.9*Fixed Effect Estimates for Multilevel Models Predicting State Appearance Comparison**Motivation*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	6.48***	0.40	5.65***	0.55	5.12***	0.63
Time	-55.31***	6.35	-37.01***	10.64	-31.78*	12.24
Context	0.17	0.32	0.02	0.64	1.09	0.90
Intervention	0.13	0.32	1.96**	0.64	3.05**	0.91
Time x Context			3.23	12.33	-7.29	17.28
Time x Intervention			-40.44**	12.33	-51.14**	17.52
Context x Intervention					-2.17	1.28
Time x Context x Intervention					21.23	24.61

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.10*Fixed Effect Estimates for Multilevel Models Predicting State Mood*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	1.94***	0.22	2.30***	0.30	2.35***	0.35
Time	63.65***	3.43	55.62***	5.81	55.04***	6.70
Context	-0.17	0.18	-0.11	0.35	-0.21	0.50
Intervention	0.14	0.18	-0.66 ^t	0.35	-0.75	0.50
Time x Context			-1.32	6.73	-0.16	9.46
Time x Intervention			17.60**	6.73	18.77	9.53
Context x Intervention					0.20	0.71
Time x Context x Intervention					-2.33	13.45

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.11*Fixed Effect Estimates for Multilevel Models Predicting State Distress*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	5.88***	0.41	5.96***	0.57	5.85***	0.66
Time	-62.43***	6.25	-64.22***	10.73	-65.54***	12.42
Context	0.11	0.35	-0.82	0.65	-0.60	0.93
Intervention	0.29	0.35	1.07	0.65	1.30	0.93
Time x Context			20.86	12.34	23.50	17.52
Time x Intervention			-17.44	12.34	-14.79	17.57
Context x Intervention					-0.46	1.31
Time x Context x Intervention					-5.18	24.68

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.12*Fixed Effect Estimates for Multilevel Models Predicting State Feelings of Threat*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	3.78***	0.38	3.50***	0.53	3.67***	0.61
Time	39.13***	5.67	-32.99**	9.88	-39.48***	11.42
Context	0.40	0.33	0.32	0.60	-0.02	0.85
Intervention	-0.09	0.33	0.54	0.60	0.21	0.86
Time x Context			1.83	11.29	14.58	16.02
Time x Intervention			-13.98	11.29	-1.17	16.08
Context x Intervention					0.65	1.20
Time x Context x Intervention					-25.10	22.50

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.13*Fixed Effect Estimates for Multilevel Models Predicting State Feelings of Guilt*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	5.23***	0.48	4.75***	0.67	5.01***	0.77
Time	44.42***	7.47	-33.60**	12.86	-39.79**	14.79
Context	0.52	0.40	0.98	0.78	0.46	1.10
Intervention	0.02	0.40	0.52	0.78	-0.01	1.11
Time x Context			-10.30	14.90	2.08	20.92
Time x Intervention			-11.27	14.89	1.46	21.21
Context x Intervention					1.05	1.56
Time x Context x Intervention					-24.99	29.72

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.14*Fixed Effect Estimates for Multilevel Models Predicting State Feelings of Shame*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	5.65***	0.46	5.74***	0.64	6.19***	0.73
Time	-52.86***	7.03	-54.90***	12.02	-64.34***	13.74
Context	-0.02	0.39	-0.62	0.74	-1.53	1.04
Intervention	0.22	0.39	0.64	0.74	-0.29	1.05
Time x Context			13.29	14.01	32.53	19.61
Time x Intervention			-9.42	14.01	10.17	19.79
Context x Intervention					1.84	1.48
Time x Context x Intervention					-38.83	27.86

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.15*Fixed Effect Estimates for Multilevel Models Predicting State Feelings of Pride*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	1.10**	0.40	0.56	0.55	0.27	0.63
Time	57.81***	5.97	69.77***	10.30	80.42***	11.81
Context	-0.19	0.34	0.67	0.63	1.25	0.89
Intervention	-0.81*	0.34	-0.61	0.63	-0.02	0.90
Time x Context			-19.18	11.85	-40.24*	16.60
Time x Intervention			-4.39	11.85	-25.95	16.74
Context x Intervention					-1.15	1.25
Time x Context x Intervention					42.36	23.47

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.16*Fixed Effect Estimates for Multilevel Models Predicting State Feelings of Strength*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	0.72	0.41	0.58	0.57	0.26	0.65
Time	61.08***	6.18	64.13***	10.66	75.84***	12.20
Context	0.45	0.34	1.22 ^t	0.65	1.85*	0.92
Intervention	-0.36	0.34	-0.87	0.65	-0.24	0.92
Time x Context			-17.06	12.26	-40.21*	17.16
Time x Intervention			11.27	12.26	-12.43	17.30
Context x Intervention					-1.24	1.29
Time x Context x Intervention					46.56	24.25

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.17*Fixed Effect Estimates for Multilevel Models Predicting State Feelings of Calm*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	3.02***	0.44	3.14***	0.60	3.51***	0.69
Time	52.53***	6.86	49.78	11.48	48.84***	13.24
Context	-0.01	0.36	1.24	0.70	0.49	0.98
Intervention	-0.20	0.36	-1.73*	0.70	-2.49*	0.99
Time x Context			-27.47*	13.30	-25.44	18.70
Time x Intervention			33.67*	13.30	35.72	18.92
Context x Intervention					1.51	1.40
Time x Context x Intervention					-4.08	26.60

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.18*Fixed Effect Estimates for Multilevel Models Predicting State Feelings of Peace*

Fixed Effect	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	1.45**	0.52	2.12	1.07	3.04*	1.24
Time	67.28***	6.96	55.35**	18.27	44.92*	19.57
Context	-0.02	0.38	1.03	0.88	0.02	1.12
Intervention	-0.00	0.38	-2.07*	0.87	-3.08**	1.11
Time x Context			-24.96	15.34	-17.92	16.05
Time x Intervention			43.65**	15.18	50.52**	15.86
Context x Intervention					1.18	0.80
Time x Context x Intervention					N/A due to study error	N/A due to study error

Note. *B*s represent the unstandardized regression coefficients. Context = comparison context condition (Live vs. Recalled, where Recalled is the reference group). Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.19

Fixed Effect Estimates for Multilevel Models Exploring Sustainability of Momentary Outcomes over 72-Hour Contract Period

Fixed Effect	Model	
	<i>B</i>	<i>SE</i>
Dependent Variable: State Body Dissatisfaction (BISS)		
Intercept	5.14***	0.14
Time	-0.12***	0.03
Intervention	-0.00	0.21
Time x Intervention	0.02	0.05
Dependent Variable: State Body Dissatisfaction (VAS)		
Intercept	95.41***	0.22
Time	-0.20***	0.06
Intervention	-0.05	0.31
Time x Intervention	0.05	0.09
Dependent Variable: State Self-Compassion (VAS)		
Intercept	4.79***	0.25
Time	0.01	0.06
Intervention	0.20	0.35
Time x Intervention	-0.01	0.09

Dependent Variable: State Connectedness to Others

Intercept	5.78***	0.26
Time	-0.02	0.72
Intervention	-0.18	0.62
Time x Intervention	0.06	0.10

Dependent Variable: State Appearance Comparison Motivation

Intercept	3.50***	0.25
Time	-0.05	0.08
Intervention	-0.53	0.36
Time x Intervention	0.04	0.12

Dependent Variable: State Distress

Intercept	2.61***	0.26
Time	0.04	0.62
Intervention	-0.35	0.37
Time x Intervention	-0.02	0.12

Dependent Variable: State Feelings of Threat

Intercept	1.79***	0.21
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Time	-0.08	0.06
Intervention	-0.39	0.29
Time x Intervention	-0.00	0.08

Dependent Variable: State Feelings of Guilt

Intercept	2.72***	0.28
Time	-0.08	0.08
Intervention	0.09	0.40
Time x Intervention	-0.15	0.12

Dependent Variable: State Feelings of Shame

Intercept	2.45***	0.27
Time	-0.07	0.08
Intervention	0.22	0.39
Time x Intervention	-0.08	0.11

Dependent Variable: State Feelings of Pride

Intercept	4.52***	0.26
Time	-0.03	0.07

Intervention	-0.92*	0.38
Time x Intervention	0.08	0.11

Dependent Variable: State Feelings of Strength

Intercept	4.38***	0.26
Time	0.04	0.07
Intervention	-0.09	0.38
Time x Intervention	-0.05	0.10

Dependent Variable: State Feelings of Calm

Intercept	5.75***	0.28
Time	-0.00	0.08
Intervention	0.34	0.40
Time x Intervention	-0.04	0.12

Dependent Variable: State Feelings of Peace

Intercept	5.02***	0.29
Time	0.08	0.08
Intervention	0.67	0.41

Time x Intervention

-0.19

0.12

Note. *B*s represent the unstandardized regression coefficients. Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.20

Fixed Effect Estimates for Multilevel Models Exploring Changes in Trait Outcomes as a Function of Intervention Condition from Baseline to 72 Hours Later

Fixed Effect	Model	
	<i>B</i>	<i>SE</i>
Dependent Variable: Body Dissatisfaction		
Intercept	57.04***	1.82
Time	-4.03***	0.44
Intervention	2.29	2.61
Time x Intervention	-0.97	0.66
Dependent Variable: Restrained Eating		
Intercept	2.71***	0.17
Time	-0.27***	0.04
Intervention	0.19	0.25
Time x Intervention	-0.07	0.06
Dependent Variable: Body Image Comparisons		
Intercept	79.52***	2.21
Time	-5.72***	0.57
Intervention	4.97	3.17
Time x Intervention	-2.07*	0.86

Dependent Variable: Self-Compassion

Intercept	2.63***	0.07
Time	0.15***	0.02
Intervention	0.07	0.10
Time x Intervention	0.02	0.03

Dependent Variable: Social Safeness

Intercept	3.42***	0.09
Time	0.04*	0.02
Intervention	-0.09	0.13
Time x Intervention	0.06*	0.03

Note. Bs represent the unstandardized regression coefficients. Intervention = intervention condition (Caregiving vs. Competition, where Competition is the reference group).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2.21*Summary of Study Findings*

State-Level Outcomes: In-Lab Analyses				
Variable	Time	Time x Intervention	Time x Context	Time x Context x Intervention
Body dissatisfaction (BISS)	↓			
Body dissatisfaction (VAS)	↓	Care > Comp		
Self-compassion (State SCS-SF)	↑			
Self-compassion (VAS)	↑		Recall > Live	
Social safeness	↑			
Connectedness to others	↑			
Connectedness to target	↑	Care > Comp		
Appearance comparison motivation	↓			
Mood	↑	Care > Comp		
Distress	↓			
Threat	↓			
Guilt	↓			
Shame	↓			
Pride	↑			
Strength	↑		Recall > Live	
Calm	↑	Care > Comp		
Peace	↑	Care > Comp		
State-Level Outcomes: Longitudinal Analyses Examining Sustainability of Effects				
Variable	Time^a	Time x Intervention		
Body dissatisfaction (BISS)	↓			
Body dissatisfaction (VAS)	↓			
Self-compassion (VAS)				
Connectedness to others				

Appearance comparison motivation
Mood
Distress
Threat
Guilt
Shame
Pride
Strength
Calm
Peace

Trait-Level Outcomes: Longitudinal Analyses

Variable	Time	Time x Intervention
Body dissatisfaction	↓	
Dietary restraint	↓	
Body image comparison orientation	↓	Care > Comp
Self-compassion	↑	
Social safeness	↑	Care > Comp

Note. Context = comparison context condition (Live vs. Recalled). Intervention = intervention condition (Caregiving vs. Competition).

^aThe absence of time effects for the longitudinal analyses examining the sustainability of effects among state-level outcomes indicates that there were no changes over time for the given variables – i.e., participants were able to sustain the momentary effects of their assigned intervention through to the end of the contract period.

General Discussion

Summary of Findings

This program of research sought to explore the potential applications of the caregiving mentality in helping to buffer the negative effects of appearance comparisons on women's body image, and more broadly, their psychological well-being. Specifically, the three studies presented here sought to explore in depth the effects of cultivating an orientation of care and compassion in response to unfavourable appearance comparisons, and to compare this approach to the more widely studied competitively-oriented strategy of making favourable comparisons to the same target in non-appearance domains. The population of interest across these studies was women who self-reported frequent engagement in appearance comparisons, as this group is likely most vulnerable to the adverse consequences of appearance comparisons (e.g., Myers & Crowther, 2009; O'Brien et al., 2009), and thus, may benefit most from learning strategies to target such comparisons (Vimalakanthan et al., 2018).

Study 1 compared the momentary effects of three different strategies on affective and body-specific well-being following the recall of an unfavourable appearance comparison: 1) cultivating a mentality of care and compassion towards the comparison target (Caregiving); 2) engaging in favourable comparisons in non-appearance domains towards the target (Competition); or 3) distracting oneself from the situation using a counting task (Control). The relative effects of these strategies on (momentary) motivation to make further comparisons was also an outcome of interest. Secondly, Study 1 also sought to explore the moderating influence of trait social comparison orientation on outcomes. Findings indicated that, although women in both the Caregiving and Competition conditions experienced greater reductions in their body dissatisfaction relative to those in the Control condition, these two former conditions did not

differ from one another in their effects. However, cultivating compassion and well-wishes towards comparison targets more positively impacted women's affect than making favourable comparisons towards them. Specifically, women who practiced the caregiving intervention experienced more significant increases in feelings of peacefulness and more significant reductions in feelings of distress. Furthermore, they experienced significant reductions in their state motivation to make further appearance comparisons relative to the women who practiced the other interventions. Interestingly, trait social comparison orientation did not emerge as a moderator of any of the relationships between condition and study outcomes – that is, there were no significantly divergent patterns detected in the impact of condition on outcome as a function of women's overall tendency to compare themselves to others.

Using a similar study paradigm and all three experimental strategies from Study 1, Study 2 sought to replicate findings from Study 1, while addressing its limitations and attempting to extend these findings in critical ways. Specifically, Study 2 explored the momentary effects of adopting an orientation of care and compassion: 1) in the context of a live appearance comparison, rather than a recalled context; 2) using a more naturalistic social media setting (Instagram) where appearance comparisons frequently occur; 3) among participants recruited from both university and community settings, i.e., a more representative sample; and 4) adding validated self-report measures and a behavioural task to more diversely measure outcomes. Study 2 also broadened outcomes of interest beyond momentary affective and body-specific well-being and comparison motivation to include state self-compassion and social safeness/connectedness, which I believed would increase uniquely in response to cultivating care and compassion. Finally, Study 2 continued the exploration of trait social comparison orientation as a potential moderating influence of the effects of the strategies under study.

Findings from Study 2 indicated that women across the Caregiving, Competition, and Control conditions experienced momentary improvements in affect, body dissatisfaction, self-compassion, social safeness/connectedness, and comparison motivation. Women who cultivated care and compassion towards their live comparison targets (Caregiving), however, reported significantly reduced state motivation to make social comparisons and significantly increased state self-compassion relative to women who made favourable comparisons in non-appearance domains (Competition) or women who distracted themselves from the situation (Control). Again, trait social comparison orientation did not emerge as a moderator of any of the relationships between condition and study outcomes. Finally, findings from a behavioural image-viewing task developed specifically for this study showed that women who had practiced the competition intervention spent significantly more time viewing comparison-oriented images (i.e., images likely to invite appearance comparison behaviour) than non-comparison-oriented images (i.e., images unlikely to invite appearance comparison behaviour), and overall spent a significantly greater proportion of their total viewing time on comparison-oriented images, than women who had practiced the other two strategies. Taken together, findings from this study echoed those of Study 1 in demonstrating that although the caregiving and competition interventions were often equally beneficial to affective and body-specific well-being, the caregiving intervention seemed to offer a few unique advantages; namely in Study 2, reducing comparison motivation and increasing self-compassion.

Study 3 sought to address the limitations of Studies 1 and 2 and to clarify important questions about factors that may promote the efficacy of the compassionate approach to intervening with appearance comparisons. As with these previous studies, this study explored whether in the aftermath of an unfavourable appearance comparison, the caregiving intervention

(i.e., adopting a mentality of care and compassion towards the comparison target) may be more beneficial than the competition intervention (i.e., making favourable comparisons on non-appearance domains towards the comparison target) to women's affective and body-specific well-being, comparison motivation, self-compassion, and social safeness/connectedness. The control intervention was omitted in this study. Critically, Study 3 also aimed to: 1) directly compare the effects of comparison context (i.e., live vs. recalled), which had differed between Studies 1 and 2, as well as to examine the moderating influence of context on intervention efficacy; and 2) explore both the momentary and longitudinal effects practice of the interventions of interest. Hypotheses related to comparison context were exploratory and were mainly posited with the aim of potentially resolving discrepancies in findings between Studies 1 and 2. Specifically, because in Study 1 participants were asked to recall a recent unfavourable appearance comparison, while in Study 2 they were prompted to make a comparison 'live,' Study 3 sought to explore how this contextual difference may affect outcomes, and more importantly, factor into the relative efficacy of the two interventions. In terms of the second aim, however, it was hypothesized that the caregiving intervention would demonstrate greater benefits on a momentary level than the competition intervention, that these momentary benefits would be more sustainable, and further, that the caregiving intervention would ultimately be more beneficial over the longitudinal study period. Consistent with results from Studies 1 and 2, findings from Study 3 indicated that women practicing either intervention reported momentary improvements in all outcomes of interest. However, women who adopted a mentality of care and compassion towards their comparison target reported significantly greater momentary improvements in their affect, including general mood, calmness, and peacefulness; body dissatisfaction; appearance comparison motivation; and connectedness (to target) than women

who made favourable comparisons in non-appearance domains towards their comparison target. The momentary benefits experienced by women in both conditions in-lab appeared to be sustained over 72 hours of repeated practice, as there were no further significant changes over time in these outcomes over the longitudinal period with the exception of body dissatisfaction, which continued to significantly decrease. However, the assigned intervention did not influence the sustainability of these momentary outcomes. Findings further indicated that women practicing either intervention reported significant decreases in body dissatisfaction, restrained eating, and body image comparison orientation, as well as increasing levels of self-compassion and social safeness over the course of the 72-hour study period. However, women who practiced the caregiving intervention saw significantly greater reductions in body image comparison orientation as well as significantly increased feelings of social safeness compared to those in the competition condition. Finally, across both live and recalled comparison contexts, women saw momentary benefits with all outcomes of interests. However, regardless of the intervention they practiced, women who intervened with a recalled appearance comparison experienced some significant advantages over those intervening with a live appearance comparison. Specifically, they experienced increased self-compassion and feelings of calmness. Comparison context did not interact with intervention condition to influence changes in any outcomes of interest, suggesting that the difference in context – namely, whether the unfavourable appearance comparison was recalled or engaged in live – across Studies 1 and 2 were likely not responsible for the divergent findings between the two.

A Case for Compassion over Comparison in the Appearance Domain

Taken together, the program of research presented in this dissertation lends credence to a social mentality theory-driven perspective on intervening with appearance comparisons. In

particular, it highlights the potential of activating the caregiving mentality in helping to buffer the wide-ranging harms associated with these comparisons. Across the three studies presented here, the strategy of cultivating an orientation of care and compassion towards the target of an unfavourable appearance comparison was beneficial to well-being in a number of domains, including that of affect, body dissatisfaction, comparison motivation, self-compassion, and social safeness/connectedness. Women who practiced this caregiving intervention typically benefited at a level that did not differ statistically from women who practiced the competition intervention, which involved making favourable comparisons in non-appearance domains towards the target of an unfavourable appearance comparison. Both interventions were typically more beneficial than the control intervention, which involved distracting oneself from the feelings of the comparison with a counting task. Such a pattern of findings arguably establishes the adoption of a caregiving orientation as a viable approach to intervene with appearance comparisons.

While the caregiving and competition approaches to intervening with unfavourable appearance comparisons may be comparably efficacious, a noticeable, albeit mixed, pattern of findings surfaced across these three studies, suggesting that there may be benefits offered by the caregiving intervention over and above the competition intervention. Significantly, women who cultivated this compassionate attitude towards someone just moments before perceived as a social threat saw more momentary improvement in wide-ranging domains of well-being. Specifically, they experienced greater improvements in: affect, including their overall mood (Study 3), distress (Study 1), feelings of peacefulness (Study 1, Study 3), and feelings of calmness (Study 3); body dissatisfaction (Study 3); comparison motivation in the domain of appearance (Study 1, Study 3) and more generally (Study 2); self-compassion (Study 2); and feelings of social connectedness to their comparison target (Study 3). Among women who

practiced cultivating compassion towards comparison targets over a longer period of time, body image comparison orientation decreased while feelings of social safeness increased significantly relative to women who practiced making favourable comparisons in non-appearance domains towards comparison targets. Overall, results across studies suggest that there may be unique momentary and longitudinal advantages of adopting a caregiving mentality in the face of an unfavourable appearance comparison as compared to simply distracting oneself or trying to find other areas in which one is superior to the target.

Although future research is needed on this topic, findings may tentatively suggest that the Caregiving strategy may ultimately be more useful and less harmful than the Competition strategy for women to practice in response to unfavourable appearance comparisons. Among the broad benefits offered by the Caregiving strategy, what is perhaps most distinctive is its greater ability to reduce comparison motivation on a momentary basis and body image comparison orientation on a more long-term basis. This pattern of findings emerged across studies and is a promising antidote to the well-established cycle driven by unfavourable appearance comparisons in which women making these comparisons continue to do so even when the practice makes more and more unhappy (Leahey et al., 2007). That women who cultivate a compassionate, caregiving orientation would report even a momentary motivation to reduce comparisons and potentially escape this vicious cycle is encouraging. Such findings also align with the theoretical proposition underlying this program of research that suggests we likely have an activated competitive mentality when we make social comparisons and may benefit from shifting out of this mentality altogether.

Another distinctive advantage that emerged from the strategy of cultivating care and compassion towards others was the consequent increase in care and compassion towards oneself.

Women who practiced the caregiving strategy reported significantly increased state self-compassion relative to other strategies of interest, suggesting that at least on a momentary basis, adopting an orientation of compassion and loving-kindness towards their comparison targets more effectively helped them redeploy that orientation towards their own personal struggles. This finding is consistent with research suggesting that compassionate thoughts and behaviours towards others can activate schemas that promote compassion towards one's own distress (Breines & Chen, 2012; Hermanto et al., 2017).

In addition to the findings highlighting the relative benefits of a caring orientation, some results may be interpreted as pointing toward the relative harms of making favourable comparisons in non-appearance domains towards comparison targets. For example, the behavioural task results from Study 2 suggested that those who practiced the competition strategy subsequently spent significantly more time viewing comparison-oriented images than women who had practiced the other two strategies. While much more research is needed to validate this task and its findings, taking viewing time as a proxy for comparison behaviour would suggest that those who intervened with an unfavourable appearance comparison by remaining grounded in the competitive mentality and continuing to make comparisons may have greater difficulty shifting out of this mentality and ceasing comparison behaviour even when it is no longer socially relevant. Although such a strategy seems to offer comparable benefits on a momentary basis to caregiving, research has suggested that overreliance on the competitive mentality may ultimately be detrimental to well-being (e.g., Leahey et al., 2007; Lin & Soby, 2016). This detrimental impact is arguably already evident in the inherent premise of the competition strategy, in which women seeing other women as social threats in the appearance domain (i.e., while making an unfavourable appearance comparison) are then encouraged to

extend this competitive perspective to other domains (i.e., by making favourable comparisons). Such an approach clearly does not promote social connectedness so much as actively work against it by perpetuating a rank-focused view of one's social environment (Gilbert, 2005). Given how paramount social connectedness is to well-being, over time, the continued comparisons perpetuated by the competitive social mentality may be harmful. More research on the competition strategy is needed with respect to its consequences on social connectedness; in particular, qualitative approaches to better understand the phenomenology of favourable comparisons may be beneficial.

This program of research is one of the first to consider, and consequently, demonstrate, how cultivating a compassionate, caregiving orientation towards others in the body image domain can have wide-ranging benefits to affective and body-specific well-being, as well as one's relationship with self and others. More broadly, it adds to a growing field of research establishing the benefits of compassion and self-compassion on physical, psychological, and social well-being (e.g., Brown et al., 2003; Cosley et al., 2010; Ferreira et al., 2013; Hutcherson et al., 2008; Neff et al., 2007; Neff & Pommier, 2013).

The Role of Social Comparison Orientation

Across these three studies, the population of interest was women who reported frequent engagement in appearance comparisons, previous research having suggested that this group may be most vulnerable to appearance comparisons and their harms (e.g., Myers & Crowther, 2009; O'Brien et al., 2009). Additionally, the moderating influence of one's dispositional tendency to make social comparisons, or social comparison orientation, was of particular interest in this program of research, because: 1) the broader literature on social comparisons suggests that those who engage in them more often, regardless of direction, are more negatively affected (Buunk &

Gibbons, 2006; Buunk et al., 2001) compared to those who engage in them less often; and 2) this association is also evident specifically within the appearance domain (Myers & Crowther, 2009). Indeed, in previous research, trait social comparison orientation was found to moderate the effect of the caregiving intervention on body-specific well-being (Vimalakanthan et al., 2018). That is, for women who more often compare themselves to others (i.e., high in social comparison orientation), responding to unfavourable appearance comparisons by cultivating compassion and loving-kindness towards comparison targets led to greater reductions in body dissatisfaction, restrained eating, and body image comparison orientation relative to those who responded by making favourable appearance comparisons towards targets on non-appearance domains; however the reverse was true for those who did not often compare themselves to others (i.e., low in social comparison orientation; Vimalakanthan et al., 2018).

As such, both Studies 1 and 2 sought to explore whether social comparison orientation would continue to moderate the effects of the interventions on outcomes of interest even at a momentary level. However, this trait did not emerge as a moderator in either study. Although this was a surprising departure from previous research, both studies were brief and focused on momentary effects. It is possible that the moderating effect of social comparison orientation may only emerge in the context of a longer period of study focused on longitudinal change, with opportunities for repeated practice of the interventions, as it did during the 48-hour study period implemented by Vimalakanthan and colleagues (2018). Potential moderating effects may additionally have been weakened by the eligibility criteria set in these studies, with recruitment targeted towards women who self-reported frequent engagement in appearance comparisons; indeed, in Study 2 this was a formal inclusion criterion. That is, given that the sample of participants in these studies already likely skewed towards higher-than-average social

comparison orientation, it was likely difficult to make further distinctions on the basis of this trait within this pool. Nevertheless, the question of whether trait social comparison orientation is an important factor in the consideration of who exactly may benefit most from cultivating a mentality of care and compassion to intervene with appearance comparisons remains important to pursue in future research.

Limitations

This collection of results should be interpreted with caution given a number of limitations that emerged across the three studies and are relevant to this program of research as a whole. First, participation across studies was limited to women, a recruitment decision made based on evidence from the appearance comparison literature indicating that relative to men, women make unfavourable appearance comparisons more frequently, and are consequently more impacted in terms of body image (Strahan et al., 2006; Thompson & Heinberg, 1993). However, the decision to limit the scope to this research to women by no means seeks to minimize the extent to which men also engage in and are impacted by appearance comparisons. Future research investigating the relative efficacy of the caregiving and competition interventions among men would be of great interest, especially when the differing body-related pressures and sociocultural norms faced by men and women are taken into account.

Second, samples across this program of research were relatively homogeneous when considering factors such as age, ethnicity, and class, likely because all three studies recruited in whole or in part from a university setting. Participants were relatively young, educated, and often Caucasian (ranging from over a quarter to over half of all participants across studies). Future work should investigate the two interventions and their relative efficacy among older populations, in a broader range of settings (e.g., community, clinical), and across cross-cultural

samples. There is some evidence that favourable comparisons are not universally protective across cultural groups: Rancourt and colleagues (2016) found that for Hispanic/Latina women, favourable comparisons were as harmful as unfavourable comparisons with respect to effects on eating behaviours and attitudes. Also, given that certain cultures value collectivism more than others, it would be interesting to consider whether the caregiving mentality would be easier for women from these cultures to enact.

Third, the studies in this program of research relied almost entirely on self-report measures, with the exception of the behavioural task used in Study 2. This reliance presents a limitation, especially for Study 2 and the contract period component of Study 3 during which participants were not in a lab setting and may have been distracted or disengaged while completing measures. Furthermore, the generous use of unvalidated single-item VAS measures – while previously employed in this field of research (e.g., Cattarin et al., 2000) and certainly useful in brief state-level investigations such as my studies – arguably detracts from the psychometric strength of this program of research. Future research should find a way to incorporate a greater proportion of validated measures, whether these are VASs or traditional questionnaires; and also include more objective behavioural and/or implicit measures in the study design. Although Study 2 involved the development and inclusion of a behavioural task to address this concern, a great deal more research is needed to validate this task; it may be more prudent to include tasks that have previously been validated in future work.

Fourth, all three studies were conducted over a relatively short duration, and Study 3, which was longest in duration was still limited in its contract period lasting only 72 hours. This presents a barrier in being able to truly gauge the relative sustainability and the long-term effects of the caregiving and competition interventions. A longer period of study in future research –

perhaps a duration of one to two weeks, with more opportunities for follow-up – may give participants the chance to familiarize themselves with either intervention, and consequently benefit more fully from its effects. This may especially be the case for the caregiving intervention, which was likely a novel approach for most participants to whom it was randomly assigned and therefore may take more time to get used to. A longer study period could also provide the opportunity for the incorporation of a within-persons study design, so that participants could implement both interventions over the course of the study instead of being assigned to implementing only one of the two.

Finally, in the interest of replication and a stepwise approach to broadening our understanding of the core concepts at hand, these three studies employed almost identical experimental methods to investigate the caregiving mentality and its application to appearance comparisons. Even in using experimental methods, varied approaches may be helpful to test the same concepts: for example, future research could make procedural modifications with respect to how participants are taught/guided through their respective interventions. Thinking even more broadly, one could posit that given that social mentalities are inherently interpersonal, study designs that involve confederates or participant dyads may be another way to incorporate more diverse methodologies.

However, future work using more diverse methods of study is sorely needed. There remains a lot to learn about the phenomenology of appearance comparisons and the cognitive processes underlying the respective social mentalities that gave rise to the caregiving and competition interventions; qualitative approaches may be more beneficial in this regard. Correlational research to better understand how women's propensity to make appearance

comparisons is related to their affect, body-specific outcomes, and social safeness/connectedness will also be important.

Implications and Conclusions

While this program of research may have uncovered more questions than it was able to answer, cumulatively, these three studies significantly advance our understanding of the relationships between compassion, appearance comparisons, and well-being in a number of domains. They are among the first few to apply social mentalities theory to develop an intervention to address with the ubiquitous yet insidious practice of appearance comparisons, and taken together, reinforce the idea that this theory may be a valuable perspective from which to understand and intervene with appearance comparisons and their harms, hopefully arresting the cycle in which women engage in such comparisons and progressively become unhappier and unwell (Groesz et al., 2001; Leahey et al., 2011; Leahey et al., 2007). These studies are the first to demonstrate that in the face of social threat, cultivating compassion for others may offer instantaneous benefits to women's affect, body image, and comparison motivation; and moreover, improve one's compassion for self and the others involved in the context of the comparison. That an intervention momentarily manipulating an outward interpersonal orientation has the capacity to impact these different and complex domains of well-being both momentarily and longitudinally in small but meaningful ways is striking.

The promising results that emerged in these studies suggest that it may be worth investigating whether this caregiving strategy can effectively target other issues in the body image and eating domain, such as fat talk. A social behaviour like appearance comparisons, fat talk refers to the practice of women having self-disparaging conversations about their bodies (Nichter & Vuckovic, 1994). It is similarly cyclical in nature: women who engage in fat talk

subsequently report higher state body dissatisfaction, and it is the women who have higher trait body dissatisfaction that are more likely to engage in fat talk (Salk & Engeln-Maddox, 2012). Researchers have also posited that fat talk inherently involves social comparison, as women often include comparative statements in these exchanges, whether to real or imagined standards; indeed, having higher trait social comparison orientation has been found to directly predict fat talk, and the positive association between body dissatisfaction and the likelihood of engaging in fat talk is also intensified by higher trait social comparison orientation (Corning & Gondoli, 2012). While more work is needed to elucidate the extent to which fat talk is motivated by social comparison, given that there is preliminary evidence for some degree of association between the two social behaviours, the application of the caregiving mentality to target this concern using the same social mentalities theoretical lens may be useful. For example, guiding women to redirect fat talk statements or invitations with compassion and care instead of responding in kind may have benefits to their affect, body dissatisfaction, and social safeness. It would also be interesting to compare such a strategy to the commonly reported and/or studied ‘challenges’ to fat talk, which most often include denial (Salk & Engeln-Maddox, 2011) sometimes with the addition making unfavourable comparisons (i.e., “If you’re fat, then I’m humongous”; Salk & Engeln-Maddox, 2011, p. 22); or may involve explicit criticism of the tendency to fat talk (Salk & Engeln-Maddox, 2012). Given that fat talk is another social practice perpetuating the ‘normative discontent’ (Rodin et al., 1984) of body dissatisfaction, a compassion-focused perspective may be a promising avenue from which to intervene.

While independent replication and further research is needed to extend this work to clinical populations, there are many practical applications of this work for clinicians and programs working with women who may struggle with body dissatisfaction and/or disordered

eating. Competition for thinness has been found to be prevalent among women with eating disorders in multiple settings, such as ‘pro-ED’ online communities (i.e., social networking sites that serve to connect people with eating disorders and encourage these behaviours as lifestyles to which women should aspire), where researchers have found direct evidence of appearance comparisons between users and/or to ‘thinspiration’ images (Rouleau & von Ranson, 2011). More concerning, however, this competitive behaviour can persist even among clients in eating disorder treatment (Colton & Pistrang, 2004; Nygaard, 1990; Offord et al., 2006; Vandereycken, 2011). Given the preponderance of evidence suggesting that appearance comparisons are common and deleterious to body image (Myers & Crowther, 2009), even in non-clinical populations, explicitly addressing this concern among clients in eating disorder treatment programs and equipping them with tools to counteract its negative effects may be crucial to treatment success and recovery in the long-term. The caregiving mentality may be a useful resource in working to shift the culture of eating disorder treatment settings towards compassion and connectedness and away from competition.

Further, given that these concerns are salient among women in general (Rodin & Striegel-Moore, 1984), it may be helpful to educate the general population of women about appearance comparisons and their harms, and about this application of compassion in order to reduce the impact of these comparisons before they become significantly impairing to well-being. For example, existing interventions and/or programming promoting body acceptance or positivity among girls and young women could incorporate the teaching of these concepts to build resilience from a young age against the dangers of appearance comparison.

More broadly, in returning to the theoretical questions driving this program of research, it would be of great interest to explore how the compassionate approach may fare in other (non-

appearance) domains of social comparison, or in social contexts where competition is the norm. Much like what we see in the appearance domain, a higher frequency of comparisons, whether favourable or unfavourable, may be harmful to well-being in any number of domains, such as intelligence, wealth, popularity, and so on. One social context which in many ways has become the new frontier for comparison is that of social networking sites (SNSs). Because of the ubiquity with which SNSs are used, users regularly convey information about themselves in many of the aforementioned domains. Uniquely, SNSs can also convey quantitative information about a user's popularity (i.e., social rank) relative to others, perhaps through their number of followers and the likes and comments they receive. Such ready access to this information could risk overexposure to comparison information, which with time could have a detrimental impact to well-being, especially for those who are prone to making more social comparisons in general (Vogel et al., 2014; Vogel et al., 2015; Yang, 2016). It would be interesting to investigate how the caregiving intervention may buffer the potential harms that arise from comparisons made in domains beyond appearance on SNSs.

To extend this further, many smartphone applications (apps) use social networking features to encourage competition between users and motivate them to improve their performance in various domains (Bitrián et al., 2021). These features can be as innocuous as educational apps encouraging users to keep pace with others to learn a language or as nefarious as fitness apps encouraging users to restrict their eating as much as others (Cotton & Patel, 2019; Zainuddin et al., 2020). There is room here as well for a compassionate approach – perhaps user engagement and success would increase with the opportunity for users to offer each other compassionate messages when they experience setbacks, or complete tasks cooperatively rather than competitively. Of research interest is the question of whether social media keeps us more

competitive than it does connected; and if it does both, whether the harms of competition on these platforms outweigh the benefits of connection. Further, it is also interesting to consider whether the competitive attitudes that individuals have towards each other in online social environments extend to their in-person social environments, where competition is still prevalent in virtually all parts of life.

In real-life contexts, the caregiving mentality investigated here in the context of appearance comparisons may have applications in helping us more calmly and cooperatively navigate the day-to-day challenges that arise at the individual level. Adopting such a mentality in school or at work may, in addition to maintaining productivity, foster more self-esteem and more social cohesion between colleagues (Johnson & Johnson, 1989). Whether at home or in the community, engaging with others from the caregiving mentality has a broad range of benefits for both self and other, physically, psychologically, and socially (e.g., Breines & Chen, 2013; Brown et al., 2003; Hutcherson et al., 2008; Melwani et al., 2012). On a larger, and perhaps more ambitious scale, the caregiving mentality may be highly beneficial in governance, where leading with care and compassion may be essential to shepherding communities and countries through times of crisis. In these current times of crisis, when political leaders are required to make difficult and momentous choices to protect the public – for example, deciding how to distribute vaccines within a community, or enacting and enforcing legislation around social distancing to protect from contagious viruses —acting from a motivation of being caring towards others, with responsivity to distress, is imperative.

Competition – and the competitive mentality that drives it – is and will continue to be commonplace in society, and even from the theoretical lens of social mentalities, it can be considered a natural human drive. What is crucial to remember, however, is that so too is

caregiving. In times of difficulty, whether we are threatened as individuals, communities, or nations, it may be worth asking ourselves whether we want to meet these challenges with further competition or shift to a mentality that invites us to orient toward others with compassion. Results of the present dissertation, though preliminary and confined to one domain of comparison, highlight the potential merits of doing so.

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