

# A Diary Study of Self-Compassion, Upward Social Comparisons, and Body Image-Related Outcomes

Cecilie Thøgersen-Ntoumani,\* Louisa Dodos, Nikos Chatzisarantis  
and Nikos Ntoumanis

*Curtin University, Western Australia*

**Background:** Self-compassion may protect individuals experiencing poor body image and associated maladaptive outcomes. The purpose of the study was to examine within-person associations (whilst controlling for between-person differences) between appearance-related self-compassion, appearance-related threats (operationalised as upward appearance comparisons), and body image-related variables, namely, social physique anxiety, drive for thinness, and body dissatisfaction. **Methods:** A diary methodology was used whereby young women ( $n = 126$ ;  $M_{\text{age}} = 21.26$ ) responded to brief online surveys three times per day (11am, 3pm, and 7pm) every second day for one week (i.e. a total of 12 measurement points). **Results:** Results of mixed linear modeling revealed that both state appearance-related upward comparisons and self-compassion independently predicted all three outcomes in a positive and negative fashion, respectively. No significant interaction effects between state appearance-related upward comparisons and self-compassion were found. **Conclusions:** The results suggested that appearance-based self-compassion was important, not just when there was a potential threat to body image via upward appearance comparisons. The findings highlight the importance of fostering self-compassion on a daily level.

Keywords: appearance-related self-compassion, body dissatisfaction, diary study, drive for thinness, multilevel modeling, social physique anxiety

## INTRODUCTION

Dissatisfaction with appearance is so common among young people that it has been described as a “normative discontent” (Rodin, Silberstein, & Striegel-Moore, 1984). Recently, interest has spurred on factors that serve to protect

---

\* Address for correspondence: Cecilie Thøgersen-Ntoumani, School of Psychology & Speech Pathology, Curtin University, Bentley Campus, GPO Box U1987, Perth 6845, Western Australia. Email: c.thogersen@curtin.edu.au

individuals from experiencing poor body image and associated maladaptive outcomes. One such factor that has received increasing attention over the past few years is self-compassion (Neff, 2003). Self-compassion refers to being open and understanding toward personal failure and disappointments and responding with self-kindness. This variable consists of three interrelated components: (a) self-kindness, in other words showing oneself kindness in painful situations, rather than self-judgment; (b) common humanity, namely viewing personal pain and suffering as part of being human, rather than isolating experiences; and (c) mindfulness, that is the ability to take a balanced view of painful thoughts and emotions, rather than over-identifying with them (Neff, 2003). Self-compassion has been shown to promote resilience in the face of negative self-evaluations (Leary, Tate, Adams, Allen, & Hancock, 2007; Neff, 2003).

Braun, Park, and Gorin (2016) reviewed the results of 28 studies that have examined the role of self-compassion for body image-related outcomes. Braun and colleagues proposed and found preliminary support for four ways in which self-compassion can act as a protective factor in the development of poor body image and eating pathology. First, self-compassion may directly and negatively predict eating disorder outcomes regardless of risk factors. At an operational level, this type of effect, that is termed direct or main effect, means that self-compassion reduces the likelihood of eating disorder outcomes not only among individuals who are at risk of developing eating disorders but also among individuals who are not at risk of developing eating disorders. Second, self-compassion can prevent the initial occurrence of risk factors for unfavorable body image outcomes. This type of effect is analogous to an indirect effect and entails that self-compassion reduces the likelihood of eating disorder outcomes *because* self-compassionate individuals are less likely to be at risk of developing eating disorders compared to less self-compassionate individuals.

Third, self-compassion might buffer the negative effects that risk factors may exert on eating disorder outcomes. This type of effect assumes an interactive effect. It is similar to the direct effect in that it entails that self-compassion reduces the likelihood of developing eating disorder outcomes among individuals who are at risk of developing eating disorders. However, this type of effect also assumes that self-compassion is more likely to reduce the likelihood of eating disorder outcomes among high-risk individuals than among individuals who are not at risk of developing eating disorders. Finally, self-compassion can augment the indirect effects that risk factors may exert on eating disorder outcomes—an effect that is termed moderated mediation. According to this effect, self-compassion reduces the likelihood of occurrence of eating disorders not only because self-compassionate individuals are less likely to be at risk in developing eating disorders, but also because they are less sensitive to risk factors relative to less self-compassionate individuals.

Most studies included in the Braun et al. (2016) review used a cross-sectional research design. This design makes the unrealistic assumption that

constructs and their inter-relations are static rather than dynamic over time. A diary methodology in which repeated assessments are made over a specified period of time (e.g. over a week) can overcome this limitation. Diary methodology is also useful because it allows for an exploration of both within- and between-person associations between constructs. This methodology has been used successfully in the body image literature (e.g. Fitzsimons-Craft et al., 2015; Myers, Ridolfi, Crowther, & Ciesla, 2012; Pila, Barlow, Wrosch, & Sabiston, 2016). However, only a small number of studies in the self-compassion literature have employed such a methodology. Breines, Toole, Tu, and Chen (2014) conducted two studies with female university students. In one of these studies, participants were requested to complete one daily diary over a four-day period. Participants were asked to reflect over the entire day and then complete brief surveys every evening assessing levels of appearance-related self-compassion, self-esteem, and disordered eating behaviors. The results revealed that on days when the participants reported being more self-compassionate they reported fewer disordered eating behaviors, compared to days when they reported lower levels of appearance-related self-compassion. Kelly and Stephen (2016) also employed a diary methodology with female college students ( $M_{\text{age}} = 19.7$ ;  $SD = 1.93$ ) which showed that daily fluctuations in self-compassion contributed to daily fluctuations in body image and eating behaviours. In another diary study by Kelly, Miller, and Stephen (2016), young college females ( $n = 92$ ) responded to once-a-day surveys on frequency of interactions with body-focused others, daily self-compassion, and body image concerns (amongst other outcomes). Kelly et al. found that on days when participants were less self-compassionate than usual, the frequency of interactions with other people who were body-focused positively predicted body image concerns, but that this association was absent on days when they were more self-compassionate than usual, thus suggesting a buffering effect of self-compassion. However, reflecting back on feelings over a whole day could introduce memory bias and selective recalling.

Thus, an Ecological Momentary Assessment (EMA) or diary methodology in which participants are randomly asked at *various points within a day* to respond to a survey represents a stronger methodology. Such a methodology has not been previously employed in the self-compassion literature. As noted by Curran, Howard, Bainter, Lane, and McGinley (2014), virtually all theories in psychological sciences postulate joint within- and between-person processes. By using a diary methodology, it is possible to distinguish trait-like individual differences from dynamic within-person associations. As Curran et al. showed, the results of these two levels of analyses are not always similar. At the daily level, the role of state self-compassion might be more important in situations when the self is under threat, for example when comparisons against others' bodies are made. This possibility has not been previously tested in the self-compassion literature.

## Social Comparisons and Body Image

Social Comparison Theory (SCT; Festinger, 1954) has been applied in the appearance context to explain how people come to judge their levels of attractiveness. According to this theory, people compare their own appearance to that of others, and depending on the direction of that comparison, they will judge themselves to be attractive or unattractive. Thus, individuals who engage in upward appearance comparisons, comparing themselves to someone more attractive, could feel threatened if levels of attractiveness are important to these people. Indeed, numerous studies have found that many young women frequently compare themselves to what they perceive to be more attractive others (Leahey, Crowther, & Mickelson, 2007), and that engaging in such upward appearance comparisons positively predicts maladaptive outcomes, such as body dissatisfaction (Myers & Crowther, 2009), dietary restriction (Corning, Krumm, & Smitham, 2006), and disordered eating behaviors (Arigo, Schumacher, & Martin, 2014; Leahey, Crowther, & Ciesla, 2011; Leahey et al., 2007).

While it is interesting to examine differences between individuals with varying tendencies to engage in upward appearance comparisons, it is also important to explore within-person associations between self-compassion and other constructs of interest. For example, Rancourt, Leahey, LaRose, and Crowther (2015) used an EMA methodology to examine the effects of weight-focused social comparisons on diet and activity-related outcomes in young adult women with overweight and obesity. Results showed that when these women engaged in upward comparisons, they were more likely to think about dieting and exercising for weight control reasons, plus actually engage in the behaviors, compared to when they engaged in lateral comparisons (i.e. compared themselves to people whom they perceived to be of similar weight).

## Bringing Self-Compassion and Social Comparisons Literatures Together to Study Body Image

To date, only three studies have examined concurrently the associations between social comparisons and self-compassion in the context of body image-related outcomes. A cross-sectional survey study with 622 female college students by Duarte, Ferreira, Trindade, and Pinto-Gouveia (2015) explored quality of life as a result of self-compassion and appearance-based social comparisons (as well as BMI and body dissatisfaction). Path analysis showed that self-compassion was a partial mediator of the association between unfavorable appearance-based comparisons and quality of life. Similar indirect effects of self-compassion on body appreciation via frequency of social comparisons (the direction of such comparisons was not assessed) were reported by Andrew, Tiggemann, and Clark (2016) in a cross-sectional study of 266 women. In another cross-sectional study of 263 women by Homan and Tylka (2015), self-compassion was found to moderate

associations between body-related threat (including social comparisons related to appearance) and body appreciation (an indicator of positive body image). Specifically, consistent with the results of the review by Braun et al. (2016), self-compassion served to protect individuals from large decreases in body appreciation when making frequent body comparisons. However, there are limitations in these studies. First, akin to most of the studies included in the review by Braun et al. (2016), in all studies the authors used a cross-sectional survey research design. Second, self-compassion and appearance comparisons were measured at the trait level, thus again making the assumption that the variables are static rather than dynamic. Third, in these studies no differentiation was made as to whether self-compassion was universally important or whether it was pertinent only in situations which involved appearance-related threats (i.e. appearance comparisons). Homan and Tylka (2015) did test the interaction between self-compassion and body comparisons but the latter referred to the frequency of comparisons and not whether they were favorable or not. Further, self-compassion was not specific to appearance evaluations.

## Study Aims

The present study aimed to build upon previous work on upward appearance comparisons, self-compassion, and body image-related outcomes. This is the first study to examine the associations of these constructs over time and test whether appearance-related self-compassion is universally important or whether it is pertinent only in situations in which appearance-related threats (operationalised as upward appearance comparisons in this study) are present. Further, this is the first diary study in the self-compassion literature that has obtained data from participants at multiple time points within a day, thus minimising memory recall bias.

Our first aim was to explore if state appearance self-compassion and upward appearance comparisons would be independent predictors of the three outcomes (social physique anxiety, drive for thinness, and body dissatisfaction). We expected that upward appearance comparisons and appearance-related self-compassion would predict a unique amount of variance in these outcomes, even after controlling for BMI. We specifically expected that the main effects of upward appearance comparisons and appearance-related self-compassion on the three outcomes would be positive and negative, respectively. The second aim of the study was to test whether appearance self-compassion served as a protective factor only when people engage in upward appearance comparisons, or whether it was universally important regardless of a specific threat to body image (i.e. irrespective of whether upward appearance comparisons were made or not). To this end, we tested the interaction effects of state upward appearance comparisons and state appearance-related self-compassion in the prediction of the outcomes. We had no a priori hypothesis as to whether these interaction effects would be

significant or not, because the self-compassion and body comparison variables we used were quite different from those used by Homan and Tylka (2015), the only published study to date that has reported an interaction effect between these two sets of variables.

## METHOD

### Participants

Young women ( $N = 126$ ) aged 18–30 years ( $M_{\text{age}} = 21.26$ ;  $SD = 2.76$ ) took part in the study. Most of the participants were Australian university students (73.50%) and single (80.30%). Individuals were excluded from participation if they had a current or previous eating disorder (ED) diagnosis, if they reported clinical behavior features of EDs, or if they had an Eating Disorder Examination-Questionnaire (EDE-Q) score in the clinical range (Luce, Crowther, & Pole, 2008). This was a requirement made by the Human Research Ethics Committee that approved this study. Participants described themselves as Caucasian (65%), Asian Pacific Islander (10.30%), European (6.00%), African (2.60%), Hispanic (1.70%), “other” (13.70%); one participant preferred not to disclose their ethnicity. The mean Body Mass Index (BMI) of the participants was 22.58 ( $SD = 4.38$ ; range = 15.40–46.60).

### Measures

It is customary in diary research where participants are asked to respond to the same questions on multiple occasions per day over several days to use a reduced number of items per scale (if these items come from a larger scale) in order to minimise participant fatigue (Fisher & To, 2012).

*Upward Appearance Comparisons.* Two questions were included to measure upward appearance comparisons as part of each diary entry. These items were taken from a diary study conducted by Rancourt et al. (2015). Participants were first asked to indicate whether they had made an appearance-based social comparison since they got up that morning or since their last diary entry (“have you compared your weight or shape to that of another individual?”). This question improves construct validity of the social comparison measure because it prompts participants to actually attend to comparison others before responding to items aiming to capture social comparisons. This is important because, according to Wood (1996), attending to comparison others is a defining characteristic of social comparison processes. The second question related to whether the comparison was upward or downward and was rated on a 5-point scale (“Consider your most recent comparison and indicate whether your weight/shape was much

worse, worse, same, better or much better than the person you compared yourself to”). This question was dummy coded with 1 (*much worse* and *worse*) representing an upward appearance comparison and 0 (*same*, *better* and *much better*) representing no upward appearance comparison. Given that in this manuscript we were interested in upward appearance comparisons, we only analysed entries with a value of 1. Further, the total number of upward appearance comparisons during the whole study period was then calculated to represent the degree to which participants engaged in upward appearance comparisons.

*Appearance-Related Self-Compassion.* The 12-item Self-Compassion Short-Form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) was used to assess trait appearance self-compassion in the week before the diary entries began. The scale includes items pertaining to Over-Identification, Self-Kindness, and Self-Judgement. The items were modified slightly to refer to appearance-related self-compassion rather than global self-compassion, in line with Breines et al. (2014). Responses were made using a 6-point scale (1 = *Strongly disagree*; 6 = *Strongly agree*), reversing items where appropriate. The SCS-SF has demonstrated good criterion-related validity (Raes et al., 2011). In addition, three items were adapted from this 12-item scale to assess state appearance-related self-compassion and was included in each diary entry. Here, the stem for the items was changed to refer to how participants had been feeling within the past few hours (e.g. “since your previous diary entry” or “since I got up this morning”). The research team selected the items for the daily measures on the basis of face validity. During the piloting, a small sample of individuals ( $n = 10$ ) were timed in terms of how long it took them to complete the diary measures and they were asked whether they had any problems understanding the items. Following initial pilot testing, one item from each of the Over-identification (“I have been obsessing and fixating on everything that’s wrong with my body”), Self-Kindness (“I have been understanding of the aspects of my body that I don’t like”), and Self-Judgment (“I have been judgmental about my own bodily flaws”) sub-scales were used. This item reduction was necessary for all scales reported in this study to minimise participant burden given the three daily surveys and the measurement of several predictor and outcome variables. As with the SCS-SF, responses were made using a 6-point scale (1 = *Strongly disagree*; 6 = *Strongly agree*), reversing items where appropriate. The items used in the present study had an internal reliability coefficient of  $\alpha = .76$ .

*Social Physique Anxiety.* State levels of social physique anxiety were measured as part of each diary entry using two items from the State Social Physique Anxiety Scale (S-SPAS; Martin Ginis, Murru, Conlin, & Strong, 2011). The S-SPAS consists of nine items with responses given on a scale ranging from 1 (*not at all characteristic of me*) to 5 (*a great deal characteristic of me*). An example item is “I wish I wasn’t so uptight about my physique/figure”. The two



items chosen were: “I have felt uptight about my figure/physique”, and “It has made me uncomfortable to know that other people are evaluating my physique/figure”. The stem was modified asking participants to recall how they had been feeling since they got up that morning or since their previous diary entry (depending on the time of day). High scores indicated high levels of social physique anxiety. The S-SPAS has demonstrated high levels of internal reliability in previous research, and good convergent and discriminant validity (Martin Ginis et al., 2011). The items used in the present study had an internal reliability coefficient of  $\alpha = .78$ . For two-item scales, Cronbach’s alpha is identical to the correlation coefficient.

*Drive for Thinness.* Two items from the seven-item Drive for Thinness scale (Garner, Olmstead, & Polivy, 1983) were chosen to measure state drive for thinness, and were measured as part of each diary entry. The items were “I have been preoccupied with the desire to be thinner”, and “I have felt terrified of gaining weight”. The stem was modified to refer to the time since participants got up that morning or since their last diary entry. The items were scored on a scale ranging from 1 (*always*) to 6 (*never*), and both scores were reverse coded so that higher scores reflected greater drive for thinness. The reliability and convergent validity of the original drive for thinness scale has previously been supported (Garner et al., 1983). The items used in the present study had an internal reliability coefficient of  $\alpha = .88$ .

*Body Dissatisfaction.* Two items from the six-item Body Image States Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002) were used to measure state body dissatisfaction in each diary entry. The questions were scored on a 9-point scale with higher scores reflecting greater levels of body dissatisfaction. The items included one related to overall appearance where participants were asked to indicate how they had felt since getting up that morning/since their last diary entry, on a 9-point scale with response options ranging from “*extremely dissatisfied with my physical appearance*” to “*extremely satisfied with my physical appearance*”. This item was reverse scored. The other item requested participants to indicate how they had felt regarding their body size and shape, again on a 9-point scale with response options ranging from “*extremely satisfied with my body size and shape*” to “*extremely dissatisfied with my body size and shape*”. Evidence for the construct validity and reliability of the full BISS has been previously reported by Cash et al. The items used in the present study had an internal reliability coefficient of  $\alpha = .85$ .

*Body Mass Index (BMI).* Each participant’s height in meters (using a SECA stadiometer) and weight in kilograms (measured three times using a TANITA weighing scale) was measured in the week prior to the diary component to allow for a calculation of BMI.



## Procedures

Ethics approval for the study was granted by a university ethics review panel. Subsequently, participants were recruited from an Australian university via a student participation course credit pool or via social media (i.e. Facebook). No financial incentives were offered, but psychology students received course credit points for their participation in the study. The participants read an information sheet after which they were directed to a web-link where they first provided electronic informed consent and then completed a questionnaire containing a list of socio-demographic questions. They were then invited to come into a laboratory at the researchers' university to have their height and weight measures taken. In the following week, the participants received message alerts every second day over a 1-week period. They were requested to complete three electronic diary entries per day. The web-link with the diary survey was sent to their mobile phones at three set times: 11am, 3pm, and 7pm. There were 12 measurement points in total. The questions contained within each diary entry included whether and how many upward appearance comparisons participants had engaged in, levels of appearance-related self-compassion, social physique anxiety, drive for thinness, and body dissatisfaction. Each question was posed in relation to what participants had experienced and how they had felt since the previous diary entry, with the exception of the 11am entry in which participants were instructed to think about the time since getting up in the morning. The order of questions in each diary entry was randomised to minimise bias due to ordering effects.

## Data Analyses

SPSS (Version 22) was used for all data analyses. Random effects mixed linear modeling was used because observations assessed via the diary (level 1) were nested within individuals (level 2). The maximum likelihood estimation approach was used. A simulation analysis by Chakraborty and Gu (2009) showed that multilevel modeling without any ad hoc imputations is more powerful than other options for dealing with missing cases. Along the same lines, Raudenbush and Bryk (2002) suggested that when the data are missing at random or completely at random, missing data estimation with ML/EM algorithm produces unbiased estimations of the complete data. Level-1 variables were group-mean centered. As Enders and Tofighi (2007) recommended, group mean centering is appropriate if level-1 associations are of substantive interest. Centering is important for the correct interpretation of intercept and slope parameters in multilevel models. Aggregates of daily scores were included at level 2; by doing so the within-person associations at level 1 were not conflated by between-person differences in the variables of interest (Raudenbush & Bryk, 2002). The pseudo- $R^2$  value was calculated for the three dependent variables by comparing the variance

of the model without predictors to the variance of the model with predictors. We adjusted the  $p$ -value of .05 by the number of outcome variables (i.e. 3); therefore, we used a  $p$ -value of .016 to determine statistical significance.

## RESULTS

### Preliminary Analyses

We calculated skewness and kurtosis values for the trait and daily measures. All values were within the acceptable range (Min skewness =  $-.20$ ; Max skewness =  $1.09$ ; Min kurtosis =  $-.08$ ; Max kurtosis =  $-1.30$ ). Therefore, we did not transform any of these variables.

There was a high level of response compliance amongst the participants. Specifically, a total of 1,245 useable daily diary entries were collected, which equals a mean entry response of 9.96 (out of a possible 12 entries) per participant. This represents an overall response rate to the diary alerts of 83 per cent.

Intraclass correlation coefficients for state levels of social physique anxiety, drive for thinness, and body dissatisfaction showed that between-participant differences accounted for just over half of the total variance in each outcome; thus, there was substantial variance at the within-person level (social physique anxiety = 41.12%, drive for thinness = 30.92%, body dissatisfaction = 38.56%). These results support the use of mixed linear modeling.

### Main Analyses

The results (see Table 1) showed that BMI predicted body dissatisfaction in the expected direction, but it did not significantly predict social physique anxiety or drive for thinness. The total number of upward appearance comparisons was only a significant predictor of body dissatisfaction, but not of the other outcomes. In contrast, engaging in upward appearance comparisons at the state level consistently positively predicted social physique anxiety and body dissatisfaction. In other words, at times when participants engaged in upward appearance comparisons they were significantly more likely to report high levels of social physique anxiety and body dissatisfaction than when they did not engage in such comparisons, regardless of the total number of upward appearance comparisons they made. However, this was not the case for drive for thinness, as upward appearance comparisons did not significantly predict this variable (adjusted  $p = .026$ ).

The results regarding appearance-based self-compassion revealed that it was a significant predictor of all outcomes at both the between- (except trait appearance-based self-compassion predicting drive for thinness) and the within-person

TABLE 1  
Effects of Upward Appearance Comparisons and Appearance-Related Self-Compassion on Social Physique Anxiety, Drive for Thinness, and Body Dissatisfaction

	<i>Unstandardised parameter estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>	<i>Pseudo R<sup>2</sup></i>
<i>Social Physique Anxiety</i>					74.44
Intercept	<b>3.92</b>	.34	3.26, 4.59	.000	
BMI	.01	.01	-.004, .03	.16	
Total number of upward appearance comparisons	.01	.02	-.02, .05	.49	
Trait appearance self-compassion	<b>-.21</b>	.07	-.34, -.07	.004	
Aggregate appearance self-compassion	<b>-.52</b>	.06	-.65, -.39	.000	
State upward appearance comparisons	<b>.20</b>	.06	.07, .32	.002	
State appearance self-compassion	<b>-.30</b>	.05	-.40, -.20	.000	
State upward appearance comparisons × State appearance self-compassion	-.05	.06	-.18, .07	.41	
<i>Drive for Thinness</i>					75.49
Intercept	<b>6.63</b>	.53	5.58, 7.69	.000	
BMI	-.003	.01	-.03, .02	.81	
Total number of upward appearance comparisons	-.01	.03	-.06, .04	.80	
Trait appearance self-compassion	<b>-.24</b>	.11	-.46, -.02	.04	
Aggregate appearance self-compassion	<b>-.99</b>	.10	-1.19, -.79	.000	
State upward appearance comparisons	<b>.21</b>	.10	.03, .40	.026	
State appearance self-compassion	<b>-.27</b>	.08	-.43, -.12	.001	
State upward appearance comparisons × State appearance self-compassion	.03	.09	-.15, .22	.71	
<i>Body Dissatisfaction</i>					75.20
Intercept	<b>6.54</b>	.71	5.14, 7.94	.000	
BMI	<b>.08</b>	.02	.04, .11	.000	
Total number of upward appearance comparisons	<b>.11</b>	.04	.03, .18	.004	
Trait appearance self-compassion	<b>-.41</b>	.15	-.71, -.12	.01	
Aggregate appearance self-compassion	<b>-.88</b>	.14	-1.15, -.61	.000	
State upward appearance comparisons	<b>.60</b>	.13	.35, .85	.000	
State appearance self-compassion	<b>-.58</b>	.10	-.79, -.37	.000	
State upward appearance comparisons × State appearance self-compassion	-.02	.13	-.26, .23	.90	

*Note:* BMI, total number of upward appearance comparisons, trait appearance self-compassion, and aggregate appearance self-compassion are level-2 variables.

level. Put differently, participants who reported high levels of self-compassion regarding their appearance were less likely to report high levels of state social physique anxiety, drive for thinness, and body dissatisfaction than those reporting low levels of appearance-related self-compassion. In addition, in situations in

which participants reported high levels of self-compassion, they experienced lower levels of social physique anxiety, drive for thinness, and body dissatisfaction than when they reported low levels of appearance-related self-compassion. None of the interaction effects were significant, thus illustrating that state upward appearance comparisons and appearance-related self-compassion operated independently in the prediction of the outcomes.

## DISCUSSION

The present study is the first to apply a diary methodology and concurrently examine the roles of appearance-related upward comparisons and self-compassion in the prediction of body image concerns. Previous studies in this area have looked predominantly at the frequency of comparisons without specifying their direction; the few studies that have examined both upward body comparisons and self-compassion did not measure self-compassion in relation to appearance and they were also predominantly cross-sectional in nature. We used a diary methodology that provided more than one daily assessment, hence reducing memory recall bias, and which separated daily associations from between-person differences in the variables of interest.

Our findings showed broad support for our first hypothesis in that both appearance-related upward comparisons and self-compassion were independent predictors of state social physique anxiety, drive for thinness, and body dissatisfaction. These results are concordant with tenets of social comparison theory (Festinger, 1954) and conceptualisations of self-compassion (Neff, 2003). In line with previous studies using mainly cross-sectional survey designs (Arigo et al., 2014; Corning et al., 2006; Leahey et al., 2007, 2011; Myers & Crowther, 2009), state upward appearance comparisons appeared to serve as a pertinent threat to participants' body image (except for drive for thinness), as they positively predicted social physique anxiety and body dissatisfaction. Specifically, when participants engaged in upward appearance comparisons they were more likely to report high state levels of social physique anxiety and body dissatisfaction than when they did not engage in this type of comparison. In contrast, the number of total upward appearance comparisons individuals engaged in (i.e. the level-2 aggregate of the state scores) did not significantly predict two out of the three outcomes (social physique anxiety and drive for thinness). This implies that perhaps the *saliency* at one particular point in time and not the overall frequency with which women engage in upward appearance comparisons could be more damaging to their body image.

The results also showed that when the young women felt highly self-compassionate regarding their appearance, they felt less socially anxious about their physique, were less likely to be concerned about being thin, and were less dissatisfied with their bodies and appearance than when they felt less self-compassionate. These results corroborate and extend the results of Breines et al.

(2014) via assessing different body image outcomes and via using a diary methodology.

Interestingly, there was no significant interaction between the two state variables in the prediction of any of the outcomes. Thus, the data do not provide support for appearance-based self-compassion acting as a buffer or protective factor in the context of upward appearance comparisons. Our results suggest that appearance-based self-compassion is universally important, not just when the potential threat of upward appearance comparisons is present. Homan and Tylka (2015) found a significant interaction between self-compassion and frequency of body comparisons in the prediction of body appreciation. Specifically, body appreciation was more strongly and negatively predicted by high frequency of body comparisons when self-compassion was low than high. However, a closer inspection of this interaction indicates that under both high and low self-compassion the negative effect of body comparisons was significant. Taken together, the results of both Homan and Tylka and our study suggest that self-compassion has an independent and significant effect on body image, particularly more so when body image-threatening upward social comparisons are made. However, we assessed domain-specific self-compassion (i.e. specific to appearance), not global self-compassion. As such it is possible that the use of a *global* self-compassion measure could have produced significant interactions in the prediction of the outcomes examined in the current study. Indeed, the recent diary study by Kelly et al. (2016) with women attending college showed that global self-compassion buffered the associations between frequency of interactions with body-focused others and body image concerns.

## Limitations, Future Research Directions and Conclusions

Some limitations should be considered in interpreting the study's results. First, it was not possible to delineate which one of the three dimensions of self-compassion was most highly predictive of the outcomes. This is because only three items from the adapted self-compassion scale were employed. Second, the university ethics committee decided that participants with EDE-Q scores in the clinical range should not be included in the study. It is possible that significant interactions between the social comparisons and appearance-based self-compassion would have existed if greater variability in the scores on the dependent variables were present (which would be likely if participants with eating disorder symptoms had also been included). Third, the daily scales were not validated. However, we correlated the trait versions and the daily measures, and the correlations were high (.80 and above) with the exception of appearance-related self-compassion which had a correlation of .52. In addition, and in line with similar past research, only females were included in the study. Some research has shown that many young males are becoming insecure about their body appearance (Mitchison & Mond, 2015). Thus, in future studies, researchers should endeavor

to also recruit male participants. In addition, given the ethnically homogenous sample we used in this study, it would be useful if future studies were to include participants of more diverse ethnicity. Further, the degree to which the participants internalised the upward comparisons was not assessed. Indeed, it is conceivable that while some people may engage in upward appearance comparisons, the extent to which they “take in” or view the comparisons as being personally relevant may differ, with negative consequences resulting in those who internalise the comparisons. This suggestion is concordant with research on thin-ideal internalisation (Thompson & Stice, 2001).

Further, the perceived similarity to the comparison targets was not assessed. This is important because the effects of upward social comparisons may depend on the extent to which the comparison other is perceived to be similar or dissimilar to the target individual (Collins, 1996). Furthermore, a recent study employing an EMA methodology with female college students found that the medium through which upward appearance comparisons were made mattered, as upward comparisons via social media were more damaging to appearance satisfaction and mood compared to those made face-to-face or via traditional media (Fardouly, Pinkus, & Vartanian, 2017). Therefore, it seems important when examining our research questions in future studies to incorporate assessments of comparisons made via various means, social media in particular. Finally, as we examined appearance-related self-compassion as a predictor, not global self-compassion, it would be interesting in future research to include a measure of the latter, to examine if domain-specific (i.e. appearance-related) or global self-compassion is most protective against experiencing poor body image outcomes. This could have important applied implications for future interventions designed to induce self-compassion.

In conclusion, the results of the present study suggest that it is not only important to have generally high levels of self-compassion regarding one’s appearance (i.e. at the between-person level), but that it may also be critical to foster daily levels of self-compassion (i.e. at the within-person level). This may be achieved by inducing self-compassion via therapeutic approaches shown in previous research to be effective (e.g. Mindful Self-Compassion; Albertson, Neff, & Dill-Chackleford, 2014; Compassion-Focused Therapy; Goss, 2011). Such therapies can induce self-compassion by targeting mindfulness and emotion regulation.

## REFERENCES

- Albertson, E.R., Neff, K.D., & Dill-Shackleford, K.E. (2014). Self-compassion and body dissatisfaction in women: A randomized controlled trial of a brief meditation intervention. *Mindfulness*, 6, 444–454. <https://doi.org/10.1007/s12671-014-0277-3>.
- Andrew, R., Tiggemann, M., & Clark, L. (2016). Predictors and health-related outcomes of positive body image in adolescent girls: A prospective study. *Developmental Psychology*, 52, 463–474. <https://doi.org/10.1037/dev0000095>.

- Arigo, D., Schumacher, L., & Martin, L.M. (2014). Upward appearance comparison and the development of eating pathology in college women. *International Journal of Eating Disorders, 47*, 467–470. <https://doi.org/10.1002/eat.22240>.
- Braun, T.D., Park, C.L., & Gorin, A. (2016). Self-compassion, body image, and disordered eating: A review of the literature. *Body Image, 17*, 117–131. <https://doi.org/10.1016/j.bodyim.2016.03.003>.
- Breines, J., Toole, A., Tu, C., & Chen, S. (2014). Self-compassion, body image, and self-reported disorder eating. *Self and Identity, 13* (4), 432–448. <https://doi.org/10.1080/15298868.2013.838992>.
- Cash, T.F., Fleming, E.C., Alindogan, J., Steadman, L., & Whitehead, A. (2002). Beyond body image as a trait: The development and validation of the Body Image States Scale. *Eating Disorders, 10*, 103–113.
- Chakraborty, H., & Gu, H. (2009). *A mixed model approach for intent-to-treat analysis in longitudinal clinical trials with missing values*. RTI Press publication No. MR-0009-0903. Research Triangle Park, NC: RTI International.
- Collins, R.L. (1996). For better or for worse: The impact of upward social comparison on self-evaluations. *Psychological Bulletin, 119*, 51–69.
- Corning, A.F., Krumm, A.J., & Smitham, L.A. (2006). Differential social comparison processes in women with and without eating disorder symptoms. *Journal of Counseling Psychology, 53* (3), 338–349. <https://doi.org/10.1037/0022-0167.53.3.338>.
- Curran, P.J., Howard, A.L., Bainter, S.A., Lane, S.T., & McGinley, J.S. (2014). The separation of between-person and within-person components of individual change over time: A latent curve model with structured residuals. *Journal of Consulting and Clinical Psychology, 82*, 879–894. <https://doi.org/10.1037/a0035297>.
- Duarte, C., Ferreira, C., Trindade, I.A., & Pinto-Gouveia, J. (2015). Body image and college women's quality of life: The importance of being self-compassionate. *Journal of Health Psychology, 20*, 754–764. <https://doi.org/10.1177/1359105315573438>.
- Enders, C.K., & Tofghi, D. (2007). Centering predictor variables in cross-sectional multi-level models: A new look at an old issue. *Psychological Methods, 12*, 121–128. <https://doi.org/10.1037/1082-989X.12.2.121>.
- Fardouly, J., Pinkus, R.T., & Vartanian, L.R. (2017). The impact of appearance comparisons made through social media, traditional media, and in person in women's everyday lives. *Body Image, 20*, 31–39. <https://doi.org/10.1016/j.bodyim.2016.11.002>.
- Festinger, F. (1954). A theory of social comparison processes. *Human Relations, 7*, 117–140. <https://doi.org/10.1177/001872675400700202>.
- Fisher, C.D., & To, M.L. (2012). Using experience sampling methodology in organizational behavior. *Journal of Organizational Behavior, 33*, 865–877. <https://doi.org/10.1002/job.1803>.
- Fitzsimons-Craft, E.E., Bardone-Cone, A.M., Wonderlich, S.A., Crosby, R.D., Engel, S.G., & Bulik, C.M. (2015). The relationships among social comparisons, body surveillance, and body dissatisfaction in the natural environment. *Behavior Therapy, 46*, 257–271. <https://doi.org/10.1016/j.beth.2014.09.006>.
- Garner, D.M., Olmstead, M.P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*, 15–34.



- Goss, K. (2011). *The compassionate-mind guide to ending overeating: Using Compassion-Focused Therapy to overcome bingeing and disordered eating*. Oakland, CA: New Harbinger.
- Homan, K.J., & Tylka, T.L. (2015). Self-compassion moderates body comparison and appearance self-worth's inverse relationships with body appreciation. *Body Image, 15*, 1–7. <https://doi.org/10.1016/j.bodyim.2015.04.007>.
- Kelly, A.C., Miller, K.E., & Stephen, E. (2016). The benefits of being self-compassionate on days when interactions with body-focused others are frequent. *Body Image, 19*, 195–203. <https://doi.org/10.1016/j.bodyim.2016.10.005>.
- Kelly, A.C., & Stephen, E. (2016). A daily diary study of self-compassion, body image, and eating behavior in female college students. *Body Image, 17*, 152–160. <https://doi.org/10.1016/j.bodyim.2016.03.006>.
- Leahey, T.M., Crowther, J.H., & Ciesla, J.A. (2011). An ecological momentary assessment of the effects of weight and shape social comparisons on women with eating pathology, high body dissatisfaction, and low body dissatisfaction. *Behavior Therapy, 42* (2), 197–210. <https://doi.org/10.1016/j.beth.2010.07.001>.
- Leahey, T.M., Crowther, J.H., & Mickelson, K.D. (2007). The frequency, nature, and effects of naturally occurring appearance-focused social comparisons. *Behavior Therapy, 38* (2), 132–143. <https://doi.org/10.1016/j.beth.2006.06.004>.
- Leary, M.R., Tate, E.B., Adams, C.E., Allen, A.B., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology, 92*, 887–904. <https://doi.org/10.1037/0022-3514.92.5.887>.
- Luce, K.H., Crowther, J.H., & Pole, M. (2008). Eating Disorder Examination Questionnaire (EDE-Q): Norms for undergraduate women. *International Journal of Eating Disorders, 41*, 273–276. <https://doi.org/10.1002/eat.20504>.
- Martin Ginis, K.A., Murru, E., Conlin, C., & Strong, H.A. (2011). Construct validation of a state version of the Social Physique Anxiety Scale among young women. *Body Image, 8*, 52–57. <https://doi.org/10.1016/j.bodyim.2010.10.001>.
- Mitchison, D., & Mond, J. (2015). Epidemiology of eating disorders, eating disordered behaviour, and body image disturbance in males: A narrative review. *Journal of Eating Disorders, 3*, 20. <https://doi.org/10.1186/s40337-015-0058-y>.
- Myers, T.A., & Crowther, J.H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic study. *Journal of Abnormal Psychology, 118*, 683–698. <https://doi.org/10.1037/a0016763>.
- Myers, T.A., Ridolfi, D.R., Crowther, J.H., & Ciesla, J.A. (2012). The impact of appearance-focused social comparisons on body image disturbance in the naturalistic environment: The roles of thin-ideal internalization and feminist beliefs. *Body Image, 9*, 342–351. <https://doi.org/10.1016/j.bodyim.2012.03.005>.
- Neff, K. (2003). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2* (2), 85–102. <https://doi.org/10.1080/15298860309032>.
- Pila, E., Barlow, M.A., Wrosch, C., & Sabiston, C.M. (2016). Comparing the body to superior others: Associations with daily exercise and body evaluation in men and women. *Psychology of Sport and Exercise, 27*, 120–127. <https://doi.org/10.1016/j.psycsport.2016.08.001>.

- Raes, F., Pommier, E., Neff, K.D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology and Psychotherapy, 18* (3), 250–255. <https://doi.org/10.1002/cpp.702>.
- Rancourt, D., Leahey, T.M., LaRose, J.G., & Crowther, J.H. (2015). Effects of weight-focused social comparisons on diet and activity outcomes in overweight and obese young women. *Obesity, 23*, 85–89. <https://doi.org/10.1002/oby.20953>.
- Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear models: Applications and data analysis methods* (Vol. 1). Thousand Oaks, CA: Sage.
- Rodin, J., Silberstein, L.R., & Striegel-Moore, R.H. (1984). Women and weight: A normative discontent. In T.B. Sonderegger (Ed.), *Nebraska symposium on motivation: Psychology and gender* (pp. 267–307). Lincoln, NE: University of Nebraska Press.
- Thompson, J.K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current Directions in Psychological Science, 10*, 181–183. <https://doi.org/10.1111/1467-8721.00144>.
- Wood, J.V. (1996). What is social comparison and how should we study it? *Personality and Social Psychology Bulletin, 22*, 520–537.