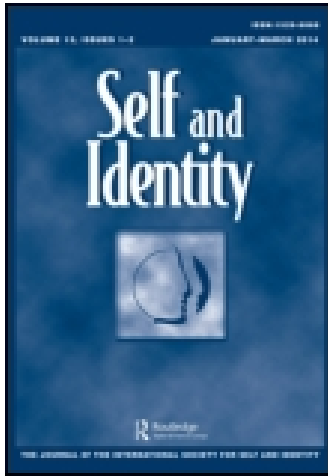


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Juliana Breines^a, Aubrey Toole^b, Clarissa Tu^b & Serena Chen^b

^a Department of Psychology, Brandeis University, Waltham, USA

^b Department of Psychology, University of California, Berkeley, USA

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Self-compassion, Body Image, and Self-reported Disordered Eating

Juliana Breines¹, Aubrey Toole², Clarissa Tu², and Serena Chen²

¹Department of Psychology, Brandeis University, Waltham, USA

²Department of Psychology, University of California, Berkeley, USA

Negative body image and disordered eating are pervasive problems among young girls and women in American society. In a daily diary study and a lab-based assessment, we examined the hypothesis that self-compassion for negative appearance-related events and perceived body flaws would predict healthier eating behavior in college-age women. Results of Study 1 indicated that on days when participants reported higher levels of appearance-related self-compassion, they also reported lower levels of disordered eating. Results of Study 2 indicated that participants who responded to a perceived body flaw in a self-compassionate way were significantly lower in subsequent self-reported body shame and anticipated disordered eating. Among those participants who exhibited restrained eating in a lab-based assessment, participants higher in self-compassion also reported lower weight-gain concern and self-punishment motives for their eating behavior. Body shame mediated the relationship between self-compassion and two measures of disordered eating, anticipated disordered eating, and weight-gain concern motives for restrained eating. All results held when controlling for self-esteem, a construct related to self-compassion. Theoretical and practical implications of these findings are discussed.

Keywords: Self-compassion; Self-esteem; Disordered eating; Body image; Body shame.

Self-compassion, which involves treating the self with kindness and understanding when faced with evaluative threats (Neff, 2003a), has been shown to predict multiple aspects of psychological well-being (e.g., Neff, Kirkpatrick, & Rude, 2007), but less attention has been paid to its potential role in body image and eating behavior. By encouraging acceptance of imperfections and reducing body shame, self-compassion may be especially well-suited to counteract appearance-related social pressures that put girls and women at risk for health-damaging disordered eating behaviors.

Disordered Eating

Disordered eating is shockingly prevalent among girls and women in most Western cultures. For example, over 50% of adolescent females in one large Midwestern study reported engaging or having engaged in fasting, using diet pills and laxatives, bingeing, and purging (Croll, Neumark-Sztainer, Story, & Ireland, 2002), and in another study 91% of college-age women reported having dieted to lose weight (Kurth, Krahn, Nairn, & Drewnowski, 1995). Although concern with weight may seem normative, it can have

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Correspondence should be addressed to: Juliana Breines, Department of Psychology, Brandeis University, Waltham, MA 02453. Email: jbreines@brandeis.edu

serious negative consequences for physical and mental health, most notably increasing the risk of anorexia and bulimia nervosa (Shisslak, Crago, & Estes, 1995).

Body shame is a major contributor to disordered eating (McKinley & Hyde, 1996; Noll & Fredrickson, 1998). Unrealistic cultural standards of beauty (Pavica, 2010) and the social importance of physical attractiveness and thinness for women (e.g., Striegel-Moore, 1997) can lead girls and women to feel shame for a perceived failure to live up to beauty ideals. Striving for unattainable ideals can lead to unhealthy weight control behaviors, such as strict adherence to rigid diets and self-destructive responses to diet failures, and to symptoms of eating disorders (Fairburn, 1995; Moradi, Dirks, & Matteson, 2005; Myers & Crowther, 2007; Shafran, Cooper, & Fairburn, 2002; Thompson & Stice, 2001).

Many of the efforts to improve body image and address disordered eating have focused on increasing body esteem or reducing adherence to the thin-ideal standard of beauty through media literacy (e.g., McVey, Davis, Tweed, & Shaw, 2004; McVey et al., 2010; O'Dea, 2004; O'Dea & Abraham, 2000; Yager & O'Dea, 2008). Other approaches aim to increase body awareness (e.g., Craighead, 2006; Daubenmier, 2005; Impett, Daubenmier, & Hirschman, 2006).

The Role of Self-compassion

Self-compassion may represent a useful approach to promoting healthier body image and eating behavior. Self-compassion involves taking an accepting and understanding attitude towards personal mistakes and shortcomings, rather than engaging in harsh self-criticism (Neff, 2003a). According to Neff (2003a), this approach involves three overlapping components: Self-kindness, or treating oneself kindly rather than being overly judgmental; common humanity, or recognizing that failure is part of being human rather than feeling like the only one with problems; and mindfulness, or taking a balanced perspective on negative events and emotions rather than over-identifying with them. For example, a self-compassionate response to feeling bad about one's appearance or body size might be to remind oneself that no one is perfect and it is normal to feel that one has flaws, as opposed to chastising oneself for not dieting enough or failing to live up to personal or societal standards.

Self-compassion has been shown to predict various aspects of well-being and positive psychological functioning, such as increased happiness and optimism (Neff et al., 2007), decreased symptoms of depression and anxiety (Neff, 2003b), increased motivation to improve (Breines & Chen, 2012), and greater relationship satisfaction (Baker & McNulty, 2011). Compared to self-esteem, a related construct, self-compassion is a stronger predictor of many aspects of adaptive functioning, including more realistic self-appraisal, more balanced reactions to stressful events, greater self-worth stability and less self-worth contingency, less social comparison, and lower narcissism (Leary, Tate, Adams, Allen, & Hancock, 2007; Neff, 2003b; Neff et al., 2007; Neff & Vonk, 2009).

Self-compassion may similarly compare favorably to self-esteem in the context of body image and eating behavior. Self-compassion does not involve making judgments about one's own physical attractiveness relative to others or relative to a given standard, but rather involves embracing perceived imperfections as a part of being human (Neff, 2003a). Because of its emphasis on common humanity, self-compassion should reduce the distress associated with the common experience of failing to meet socially prescribed beauty standards. Providing suggestive evidence for this hypothesis, prior research shows that self-compassion is negatively associated with two aspects of perfectionism, self-criticism and perceived discrepancy between performance and standards (Neff, 2003b), and

reductions in shame have been demonstrated following self-compassion interventions (Gilbert & Procter, 2006).

To date, only a small handful of studies, nearly all correlational in nature, have explored self-compassion's relevance in the domain of body image and disordered eating. One exception is a laboratory experiment by Adams and Leary (2007). These researchers found that a self-compassion intervention involving an experimenter telling participants not to be too hard on themselves for a dieting "failure" reduced distress and overeating among restrictive eaters, compared to a no-intervention control condition. Self-compassion presumably helped reduce shame that could otherwise have led to overeating following the initial lapse, a phenomenon known as the disinhibition effect (Herman & Mack, 1975). On a correlational level, self-compassion has been shown to be associated with less appearance-contingent self-esteem (Neff & Vonk, 2009), lower body concerns and eating guilt in college-aged women (Wasylikiw, MacKinnon, & MacLellan, 2012), lower social physique anxiety and objectified body consciousness in young female athletes (Mosewich, Kowalski, Sabiston, Sedgwick, & Tracy, 2011), and lower body image disturbance in breast cancer patients (Przedziecki et al., 2012).

The Present Studies

Extending this research, we sought to examine the role of self-compassion as a predictor of disordered eating behaviors and to examine the mediating role of body shame. We used daily experience sampling and laboratory assessment methods to overcome some of the limitations of correlational designs. This approach expands on the previous research discussed above by focusing on disordered eating behavior specifically, by examining day-specific and in-the-moment self-compassion, and self-reported disordered eating rather than assessing these variables retrospectively, and by examining the mediating role of body shame. Furthermore, we included self-esteem, a construct that is conceptually and empirically related to self-compassion (Neff, 2003b), as a covariate in order to address the alternative hypothesis that self-esteem, not self-compassion, may have driven the relationships we examined.¹

In Study 1, a four-day diary study, we examined the hypothesis that taking a self-compassionate approach to negative appearance-related thoughts and events would be associated with less disordered eating. Our specific prediction was that on days when participants approached appearance insecurities in a more accepting and understanding way, they would also report lower levels of disordered eating that day, relative to both the sample mean and to their own mean levels across the four days of the study. We expected these relationships to be independent from self-esteem, which would suggest that self-compassion has unique benefits beyond its association with self-esteem.

In Study 2, a laboratory assessment, we extended Study 1 by examining the relationships among self-compassion, body shame, and disordered eating. Specifically, we examined the hypothesis that approaching a perceived body flaw with self-compassion would be associated with decreased body shame and disordered eating (anticipated disordered eating and lab-based restrained eating). We further predicted that body shame would mediate the relationship between self-compassion and measures of disordered eating.

For both studies we recruited female undergraduate participants. Research suggests that negative body image and disordered eating are prevalent in non-clinical adolescent and young adult populations (e.g., Croll et al., 2002), and are more common among females (Pritchard, 2008), who are 10 times more likely than men to be diagnosed with an eating disorder (Striegel-Moore, 1997).

Study 1

Using daily diary methodology, Study 1 examined the hypothesis that on days when participants responded to negative appearance-related events in a self-compassionate way, they would also report lower disordered eating that day, relative to both sample and individual means. Because self-compassion is conceptually and empirically related to self-esteem (Neff, 2003b), daily level of self-esteem was also assessed and included as a covariate in follow-up analyses.

Method

Participants

Ninety-five female undergraduates, ranging in age from 18 to 28 ($M = 20.05$, $SD = 1.84$) participated in the four-day study for course credit. Fifty-two percent of participants were Asian-American, 22% European-American, 13% Latino-American, 1% African-American, and 12% identified with other ethnic groups.

Procedure

Participants were informed that the purpose of the study was to learn more about women's day-to-day feelings regarding their physical appearance. Participants received daily emails in the early evening including links to the online survey and were instructed to complete it at the very end of the day, reflecting back on their thoughts, feelings, and behavior from that day.² Because the total amount of time participants could spend on the study was limited by credit hour restrictions, the study could not exceed a length of four days, and shortened versions of scales were used to decrease the amount of time participants would be required to spend on each of the surveys. The abbreviation of scales is common in diary studies, as it reduces the burden on participants and the redundancy of similar items (e.g., Wilhelm & Schoebi, 2007). All variables described below were assessed at the daily level.

Measures

Appearance-related self-compassion

Daily self-compassion was assessed using an adapted version of the 26-item Self-Compassion Scale (SCS; Neff, 2003b), which asks participants to reflect on how they generally behave towards themselves in difficult times and includes items capturing self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus overidentification. For the present study, the scale was shortened to 10 items and reworded to reflect feelings regarding negative appearance-related thoughts experienced that day.³ The scale instructions read: "If you felt bad about your appearance at all today, please indicate how much you felt or did each of the following in response." Participants who had not felt bad about their appearance that day skipped this scale. Participants completed the scale (indicating that they had felt bad about their appearance at some point that day) approximately 80% of the time. An example of an item capturing self-kindness was "Today . . . I was understanding towards myself about my appearance," in place of the original item "I try to be understanding and patient towards those aspects of my personality I don't like." An example of an item capturing overidentification (reverse-scored) was "Today . . . I felt consumed by feelings of inadequacy," in place of the original item "When I fail at something important to me I become consumed by feelings of

inadequacy.” An example of an item capturing isolation (reverse-scored) was “Today . . . I felt alone and different from others,” in place of “When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.” Ratings were made on a seven-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*). The scale was internally consistent (average daily $\alpha = .79$; $M = 4.30$; $SD = .94$).

Self-esteem

Daily self-esteem was measured with two items, “good about myself” and “proud,” in response to the prompt “indicate how much each of the following describes your general mood *today*.” These two items are similar to items from the commonly-used Rosenberg Self-Esteem (RSE; Rosenberg, 1965) scale (e.g., “At times, I think I am no good at all” and “I feel I do not have much to be proud of,” both reverse-scored). Responses were made on a five-point scale (1 = *Not at All*, 5 = *A Lot*). These two items were averaged to form a composite, which had acceptable internal consistency (average daily $\alpha = .62$; $M = 2.89$, $SD = 1.01$).

Disordered eating behaviors

Disordered eating behaviors were assessed with a scale adapted from Eisenberg and Neumark-Sztainer (2010). We shortened and modified the original 14-item scale, resulting in five items assessing restricted eating and concern with weight gain (“avoided eating when you were hungry,” “dieted,” “felt preoccupied with your weight and/or body shape, or about gaining weight,” “tried to control your weight by eating little or no food,” and “felt aware of the calorie content of foods you ate”), and four items related to bingeing and purging behavior (“rapidly ate a very large amount of food,” “used laxatives, diuretics [water pills], and/or other suppositories to help control your weight and to lose weight,” “exercised vigorously and for long periods of time to burn calories or to counteract the effect of eating,” and “intentionally vomited after eating”). Participants were instructed to respond to items based on behavior specific to that day. Responses were made on a five-point scale (1 = *Never*, 5 = *Always*). The nine-item scale was internally consistent (average daily $\alpha = .83$; $M = 1.63$, $SD = .65$). Because the disordered eating distribution was left-skewed, we performed a log transformation on the disordered eating variables, normalizing the distribution.

Results

Analysis plan

Participants completed a total of 364 reports, 272 of which included reports of self-compassion. Eight participants skipped at least one day of the diary study, resulting in 364 rather than 380 total reports. These participants were still included in analyses. Hierarchical Linear Modeling (HLM; Bryk & Raudenbush, 1992) was used to conduct primary analyses. HLM is well-suited for multi-level and repeated measures analyses.

In the current study, daily responses were treated as the level 1 variables nested within participants (level 2). Analyses were conducted only at level 1, but HLM allowed us to adjust for statistical biases due to the non-independence of these observations (Kenny, Korchmaros, & Bolger, 2003; Krull & MacKinnon, 2001). Unlike standard repeated measures analyses, HLM also has the advantage of accounting for missing data. This was especially critical for the present study since participants did not report on self-compassion on days when they did not feel bad about their appearance. Restricted maximum likelihood models were used for all HLM analyses.

First, we measured how much the variance in our primary variables occurred within participants (i.e., across days) versus between participants. Next, we assessed the daily association between self-compassion and disordered eating, both with and without including self-esteem as a covariate.

Between-person and Within-person Variability

To determine how much of the variance in daily levels of self-compassion and disordered eating occurred within-participants versus between-participants, an HLM analysis was performed with no predictors at level 1 or level 2. With these outputs we calculated the interclass correlation coefficient (ICC) to determine the amount of between-person variance. The ICC is computed as $\text{Tau}/(\text{Tau} + \text{Sigma}^2)$, where Tau is the variance component for the intercept and Sigma^2 is the within-person variance. For daily self-compassion, $\tau = .55$ and $\sigma^2 = .32$, which indicates that 63% of its variance occurred between participants and the remaining 37% occurred within participants. For daily disordered eating, $\tau = .10$ and $\sigma^2 = .03$, indicating that 77% of the total variance in disordered eating occurred between participants and the remaining 23% within participants.

The larger proportion of between-person variance suggests that participants differed more from one another than deviated from their own mean daily levels of self-compassion and disordered eating. This difference is likely due in part to the difficulty of capturing substantial within-person fluctuations over the course of only four days. Because a greater portion of variance occurred at the between-person level, we used uncentered level 1 predictors for our primary analyses rather than centering these variables on participants' own means (i.e., group mean centering). Uncentered variables are based on comparisons to the total sample mean, which is primarily between-person. We then conducted supplementary analyses using group mean centered variables in order to examine whether the patterns seen at the between-participant level also occurred within participants. That is, we also examined whether increases in self-compassion relative to individual mean levels predicted increases in disordered eating.

Disordered Eating

We next examined the hypothesis that on days when participants reported higher self-compassion they would also report lower levels of disordered eating. We created an HLM model using the following equation at level 1: $Y = P_0 + P_1 * (\text{Self-Compassion}) + E$, where P_0 is the intercept, P_1 is the self-compassion slope, E the error term, and Y the predicted value of the dependent variable, disordered eating. As expected, on days when participants reported greater self-compassion, they also reported lower daily disordered eating, $B = -.08$, $t(182) = -3.81$, $p < .001$. To ensure that this relationship was not driven by self-esteem, we created a second HLM model using the following equation at level 1: $Y = P_0 + P_1 * (\text{Self-Compassion}) + P_2 * (\text{Self-Esteem}) + E$, where P_0 is the intercept, P_1 is the self-compassion slope, P_2 the self-esteem slope, E the error term, and Y the predicted value of disordered eating. When controlling for self-esteem, self-compassion remained a significant predictor of disordered eating, $B = -.09$, $t(181) = -3.84$, $p < .001$. Self-esteem was not a significant predictor of disordered eating, $B = -.01$, $t(181) = -.71$, $p = .48$.

We next examined the same relationship using group mean centered variables, which allowed us to examine the hypothesis that on days when participants reported higher self-compassion than usual (i.e., relative to their individual means as opposed to the sample

mean), they would also report lower levels of disordered eating. We used the same HLM equation as described above. As expected, on days when participants reported greater self-compassion relative to their individual mean levels, they also reported lower daily disordered eating, $B = -.08$, $t(182) = -3.15$, $p < .01$. When controlling for self-esteem, self-compassion remained a significant predictor of disordered eating, $B = -.08$, $t(181) = -2.98$, $p < .01$. Self-esteem was not a significant predictor of disordered eating, $B = .00$, $t(181) = .04$, $p = .97$.

Study 2

The results of Study 1 revealed a significant daily association between appearance-related self-compassion and disordered eating in a naturalistic setting. In Study 2, appearance-related self-compassion was assessed in the context of a laboratory-based reflection on a perceived body flaw. Body shame, anticipated disordered eating, and laboratory-based restrained eating motives were also assessed. We hypothesized that self-compassion would predict lower levels of each of these variables.

We assessed laboratory-based restrained eating by giving participants an opportunity to privately eat chocolates during a neutral task. Participants who did not eat any chocolates or ate at least one chocolate but indicated that they ate less than they wanted then reported the degree to which their restraint was motivated by weight-gain concerns or self-punishment (as opposed to, for example, disliking chocolate), and we operationalized restrained eating as higher endorsement of these motives, which we examined separately. Prior theory and research suggest that weight-gain concerns and self-punishment motives are both components of disordered eating (e.g., Favaro & Santonastaso, 2002; Lampard, Byrne, McLean, & Fursland, 2011). Finally, we hypothesized that body shame would mediate the relationship between self-compassion and all three measures of disordered eating. As in Study 1, analyses were conducted both with and without including self-esteem as a covariate.

Method

Participants

One hundred and fifty-eight female undergraduates, ranging in age from 18 to 42 ($M = 20.82$, $SD = 3.86$) participated in the study for course credit. Fifty-seven percent of participants were Asian-American, 26% European-American, 9% Latino-American, 2% African-American, and 6% identified with other ethnic groups.

Procedure

Participants were informed that the purpose of the study was to learn more about women's feelings regarding their physical appearance. Sitting in private cubicles, they first identified what they considered to be their biggest appearance-related flaw. Specifically, they read the following instructions: "Please think about something you dislike about your physical body (not facial features). If possible, please try to choose the thing that you feel most badly about, or that you consider to be your biggest flaw or source of insecurity (for example, it could be your weight, or the size/shape of a particular body part)." Participants were asked to describe this aspect of their appearance and to "describe any experiences which you feel caused, or causes you, to feel negatively about this aspect of your body (e.g., teasing, comments from friends, family members or relationship partners, looking in the mirror, media images, etc.)."

After completing the body-flaw writing task, participants completed a series of questionnaires on the computer. These questionnaires assessed appearance-related state self-compassion, self-esteem, body shame, and anticipated disordered eating. Next, participants were given an opportunity to privately consume chocolate candies while completing a neutral word search task. After this task, those who did not eat any of the chocolates or who ate at least one chocolate but indicated that they ate less than they wanted filled out an additional questionnaire assessing their reasons for restrained eating.

Measures

State appearance-related self-compassion

To assess self-compassion we used an adapted version of the 12-item short-version of the Self-Compassion Scale (SCS; Neff, 2003b; Raes, Pommier, Neff, & Van Gucht, 2011), which asks participants to consider how they typically treat themselves in tough times. The original 12-item scale contains two items from each of the three self-compassion subscales. For the present study, the scale was shortened to six items (one item from each subscale), and reworded to reflect feelings regarding negative body-related thoughts experienced in the moment, rather than in general. The instructions read: "Please indicate how much you agree or disagree with the following statements based on how you are feeling *right now*." An example of an item was "I am obsessing and fixating on everything that's wrong with my body," used in place of the original item, "When I'm feeling down I tend to obsess and fixate on everything that's wrong." Ratings were made on a seven-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*). The scale was internally consistent ($\alpha = .69$).

State self-esteem

State self-esteem was assessed with a single item, "I have high self-esteem" (SISE; Robins, Hendin, & Trzesniewski, 2001). Participants were instructed to respond based on how they were feeling "right now." Ratings were made on a seven-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

State body shame

Body shame was assessed using a state version of the Body Shame subscale of McKinley and Hyde's (1996) Objectified Body Consciousness scale. The original subscale includes eight items, four of which were included in the present study but modified to reflect body shame in the moment. For example, the item, "[Right now . . .] I feel ashamed of my body" was used in place of "When I'm not the size I think I should be, I feel ashamed." The scale has high internal consistency ($\alpha = .83$).

Anticipated disordered eating

Anticipated disordered eating behaviors were assessed using the same scale as Study 1. This time, the instructions asked participants to predict how often they would behave in each of the following ways in the coming week. Ratings were made on a five-point scale (1 = *Never*, 5 = *Always*). The scale was internally consistent ($\alpha = .82$). Because scores on the anticipated disordered eating scale were left-skewed, we performed a log transformation, normalizing the distribution.

Laboratory-based restrained eating

Towards the end of the study, participants were given an opportunity to privately consume chocolate candies while completing a neutral word search task. The experimenter gave

each participant a cup of chocolates, telling participants that the chocolate was to thank them for coming into the lab and that they were welcome to snack on the chocolate while working on a word search for three minutes. The purpose of the word search was to give participants time to eat the chocolates. Each cup was filled with 25 foil-wrapped chocolates. Participants were asked not to remove chocolates from the lab, which allowed us to ensure that all chocolates removed from the cup were actually consumed during the session. Wrapped chocolates were used for sanitary purposes, and the particular type of foil used made little noise when opened, decreasing the likelihood that participants might inhibit their eating because they felt self-conscious about other participants or the experimenter hearing them. Experimenters counted the number of remaining chocolates after each session to determine the number of chocolates consumed.

Next, participants who did not eat any chocolates or who ate at least one chocolate but indicated having eaten less than they wanted were instructed by the computer program to fill out an additional questionnaire assessing reasons for their restrained eating (participants who ate at least one chocolate and did not eat less than they wanted were instructed by the computer program to skip this questionnaire, as it was not relevant to them). Participants may have refrained from eating for a number of reasons, such as the time of day, wanting to be polite, not being hungry, or being allergic to chocolate. Thus, we wanted to capture reasons that might be more likely to relate to disordered eating. In particular, we were interested in the extent to which participants wanted to avoid gaining weight and the extent to which they felt a desire to punish themselves. We included single items to capture each of these motives: "I didn't want to eat something that might make me gain weight" and "I wanted to punish myself." Seven participants responded to the weight concern item but did not respond to the self-punishment item. Ratings were made on a seven-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*). Because scores on the self-punishment item were left-skewed, we performed a log transformation on this item, normalizing the distribution.⁴

Results

Means, standard deviations, and correlations between all variables are presented in Table 1.

Perceived Flaw

All participants were able to identify a perceived physical flaw, 66% of which were directly related to weight. Of the remaining 34%, 14 were related to chest size, nine to skin

TABLE 1 Means, Standard Deviations, and Zero-order Correlations – Study 2

	M	SD	1.	2.	3.	4.	5.
1. Self-compassion	4.70	.84	–				
2. Self-esteem	4.61	1.33	.49***	–			
3. Body shame	3.19	1.31	–.72***	–.53***	–		
4. Anticipated disordered eating	1.72	.51	–.36***	–.10	.42***	–	
5. Weight gain concern	3.29	1.93	–.46***	–.20	.43***	.59***	–
6. Self-punishment	1.69	1.03	–.35***	–.19	.34**	.47***	.45***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

problems, eight to height, and the rest to body hair, knee shape, nails, body proportion, or lack of muscle tone. When limiting the sample to participants who identified a weight-related flaw, the results described below were unchanged.

Body Shame

We first examined the hypothesis that self-compassion for the perceived physical flaw would predict lower body shame. As expected, self-compassion predicted significantly lower body shame, $\beta = -.72$, $t(156) = -13.04$, $p < .001$, and this relationship remained significant when self-esteem was included as a covariate, $\beta = -.61$, $t(155) = -9.98$, $p < .001$. Self-esteem was also a significant negative predictor of body shame: $\beta = -.23$, $t(155) = -3.68$, $p < .001$.

Anticipated Disordered Eating

We then examined the hypothesis that self-compassion would predict lower frequency of log-transformed anticipated disordered eating behavior. As expected, self-compassion predicted significantly lower anticipated disordered eating, $\beta = -.37$, $t(156) = -5.05$, $p < .001$, and this relationship remained significant when self-esteem was included as a covariate, $\beta = -.41$, $t(155) = -4.80$, $p < .001$. Self-esteem was not a significant predictor of anticipated disordered eating, $\beta = .07$, $t(155) = .83$, $p = .41$.

Laboratory-based Reasons for Restrained Eating

Participants ate an average of 2.12 chocolates ($SD = 2.55$). Self-compassion was not a significant predictor of number of chocolates eaten ($\beta = -.05$, $t(152) = -.49$, *ns*), nor was self-esteem ($\beta = -.10$, $t(152) = -1.04$, *ns*). Number of chocolates eaten was not a significant predictor of anticipated disordered eating, $\beta = -.12$, $t(155) = -1.45$, $p = .13$. This is likely because participants chose to eat or not eat chocolates for a variety of reasons, not all related to disordered eating.

For the next analyses we limited the sample to those participants who did not eat any chocolates or who ate at least one chocolate but ate less than they wanted ($n = 95$), as these were the only participants for whom it made sense to complete the reasons for restrained eating measure. Self-compassion predicted significantly lower endorsement of weight-gain concern as a motive for restrained eating, $\beta = -.36$, $t(93) = -3.66$, $p < .001$. This relationship remained significant when self-esteem was included as a covariate, $\beta = -.35$, $t(92) = -3.00$, $p = .003$. Self-esteem was not a significant predictor of weight-gain concern motives, $\beta = -.01$, $t(92) = -.08$, $p = .93$.

Self-compassion predicted significantly lower endorsement of self-punishment as a motive for not eating, $\beta = -.35$, $t(86) = -3.43$, $p = .001$. This relationship remained significant when self-esteem was entered as a covariate, $\beta = -.34$, $t(85) = -2.87$, $p = .005$. Self-esteem was not a significant predictor of self-punishment motives, $\beta = -.00$, $t(85) = -.04$, $p = .97$.

Mediation Analyses

Anticipated disordered eating

We next examined the hypothesis that body shame would mediate the relationship between body compassion and anticipated disordered eating. We followed the criteria for mediation outlined by Baron and Kenny (1986). We already established that self-

compassion was a significant negative predictor of anticipated disordered eating, which satisfied the first criterion that the independent variable must significantly influence the dependent variable. Satisfying the second criterion, self-compassion was also a significant predictor of body shame, the proposed mediator. Satisfying the third and fourth criteria, when body shame and self-compassion were both included as predictors, the relationship between body shame and anticipated disordered eating was significant, $\beta = .32$, $t(155) = 3.09$, $p < .05$, and the relationship between self-compassion and anticipated disordered eating was reduced to non-significance, $\beta = -.14$, $t(155) = -1.36$, $p = .18$.

To determine whether body shame mediated the relationship between self-compassion and anticipated disordered eating, bootstrapping analyses were conducted following the guidelines described by Preacher and Hayes (2008). Anticipated disordered eating was entered as the dependent variable, self-compassion as the predictor variable, and body shame as the proposed mediator in the SPSS macro created by Preacher and Hayes (2004) for bootstrap analyses with a single mediator. The results indicated that the indirect effect of self-compassion on anticipated disordered eating through body shame was significant, with a 99% bootstrap confidence interval of $-.1565$ to $-.0140$. Thus, body shame mediated the relationship between self-compassion and anticipated disordered eating (see Figure 1).

Weight-gain concern motives

We next tested the hypothesis that body shame would mediate the relationship between self-compassion and weight-gain concern motives for restrained eating. When body shame and self-compassion were both included as predictors of weight-gain concern, the relationship between body shame and weight-gain concern was significant, $\beta = .35$, $t(92) = 2.71$, $p < .01$, and the relationship between self-compassion and weight-gain concern was reduced to non-significance, $\beta = -.11$, $t(92) = -.81$, $p = .40$, satisfying the third and fourth criteria for mediation.

To determine whether body shame mediated the relationship between self-compassion and weight-gain concern motives, bootstrapping analyses were conducted following the guidelines described by Preacher and Hayes (2008). Weight-gain concern was entered as the dependent variable, self-compassion as the predictor variable, and body shame as the proposed mediator in the SPSS macro created by Preacher and Hayes (2004) for bootstrap

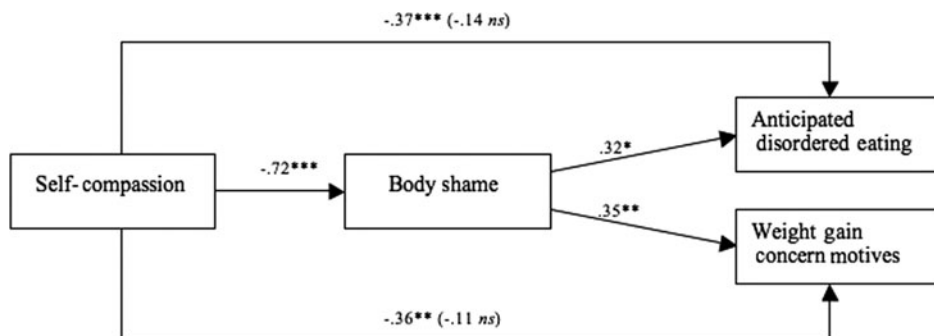


FIGURE 1 Path coefficients for body shame as a mediator of the relationship between self-compassion, anticipated disordered eating, and weight-gain concern motives. Bootstrapping results were significant with a 99% confidence interval for anticipated disordered eating and with a 95% confidence interval for weight gain concern motives. * $p < .05$, ** $p < .01$.

analyses with a single mediator. The results indicated that the indirect effect of self-compassion on weight-gain concern through body shame was significant, with a 95% bootstrap confidence interval of $-.1818$ to $-.0226$. Thus, body shame mediated the relationship between self-compassion and weight-gain concern motives for restrained eating (see Figure 1).

Self-punishment motives

We next tested the hypothesis that body shame would mediate the relationship between self-compassion and self-punishment motives for restrained eating. When body shame and self-compassion were both included as predictors of self-punishment motives, however, both predictors were non-significant ($p = .13$ and $.15$, respectively). Because body shame did not significantly predict self-punishment motives, body shame was not a candidate for mediation of the relationship between self-compassion and self-punishment motives, and a bootstrapping test was not performed.

General Discussion

Self-compassion has been shown to positively predict many aspects of psychological well-being (e.g., Neff et al., 2007), but little research has examined the potential role of self-compassion in the development and prevention of disordered eating behaviors, which are highly prevalent and dangerous for physical and mental health (e.g., Croll et al., 2002). Self-compassion is especially relevant in this domain because of its negative relationship with shame (Gilbert & Procter, 2006), a known risk factor for disordered eating (e.g., Noll & Fredrickson, 1998). Using a daily diary and laboratory-based assessment, we examined the role of self-compassion in negative body image and self-reported disordered eating behavior, finding general support for our hypothesis that self-compassion has benefits distinct from those of self-esteem. These findings build on a growing body of prior research linking self-compassion with lower levels of body image disturbances in various populations (e.g., Neff & Vonk, 2009; Przedziecki et al., 2012) and extend them by examining self-reported disordered eating as an outcome variable as well as the mediating role of body shame. Together with previous research, our findings provide support for the idea that self-compassion may help protect individuals from negative body image, and in turn reduce the risk of disordered eating and other unhealthy behaviors.

The results of Study 1 indicated that approaching negative appearance-related thoughts and events with self-compassion was associated with lower reported rates of disordered eating. Results of HLM analyses indicated that, on average, on days when participants were higher in appearance-related self-compassion, relative to the sample mean or to their own individual daily mean, they also reported fewer instances of disordered eating that day. These findings suggest that self-compassion may provide a buffer against the development of disordered eating, though experimental research would be needed to examine the causal contribution of self-compassion. Self-compassion may allow women to take a more accepting attitude towards imperfections rather than chastising themselves for failing to live up to unattained cultural beauty ideals (e.g., Pavica, 2010).

Study 2 examined real-time associations between self-compassion for a perceived body flaw, body shame, anticipated disordered eating, and laboratory-based restrained eating. Results of regression analyses indicated that, consistent with hypotheses, self-compassion predicted lower body shame, as well as lower anticipated disordered eating and lower endorsement of weight-gain concern and self-punishment reasons for lab-based restrained eating. Furthermore, body shame mediated the relationship between self-compassion and anticipated disordered eating, and between self-compassion and weight-gain concern

motives for restrained eating. These findings build on those of Study 1, suggesting that self-compassion may be associated with lower disordered eating because of its relationship with healthier body image.

An important implication of Study 2 is that the assessment of reasons for restrained eating can help to distinguish potentially disordered restrained eating (e.g., restrained eating stemming from weight concern or self-punishment) from unrelated factors, such as chocolate or gluten allergies, concerns about sugar toxicity, disliking of a particular type of food, time of day, hunger level, and any other number of factors.

The assessment of reasons was especially important in the current research because the relationship between self-compassion and eating behavior is likely a complex one. Self-compassion should in theory encourage healthy eating behavior, which would likely involve eating sweets in moderation, rather than either extreme restraint on the one hand or overeating on the other. Low self-compassion, by contrast, may be associated with vulnerability to either extreme, as Study 1 showed (i.e., lower self-compassion was associated with greater reports of behaviors related to restraint, bingeing, and purging). This pattern would not be expected to manifest as either a positive or negative correlation between self-compassion and amount eaten, without taking into account the reasons for a given eating behavior.

We addressed an important alternative explanation for the key findings in both studies. One might argue that appearance-related self-compassion was associated with lower body shame, and disordered eating because people who are able to be self-compassionate in the context of negative appearance-related events must be feeling better about themselves and their appearance to begin with (i.e., have higher self-esteem). Indeed, although self-compassion is distinct from self-esteem, the two constructs do overlap conceptually and empirically (e.g., Neff, 2003b). Thus, to ensure that appearance-related self-compassion, as opposed to self-esteem, was driving the relationships in question, we included self-esteem as a covariate and found that self-compassion uniquely and often more strongly predicted the dependent variables.

Limitations

The use of daily diary methodology in Study 1 has a number of strengths (e.g., Bolger, Davis, & Rafaeli, 2003). This methodology allowed us to examine levels of self-compassion and disordered eating as they occurred in participants' everyday lives, reducing the potential for retrospective bias, and it permitted us to observe patterns of associations across multiple days, rather than in a single cross-sectional report. There are also some limitations to our use of this methodology, however. First, although our use of daily reporting reduced retrospective bias, it did not eliminate it entirely since participants still reflected back on their day rather than reporting immediate experiences. Second, participants completed reports on only four days, limiting our ability to observe within-participant fluctuations in our primary measures. Despite the low within-participant variability, however, we were still able to observe a significant relationship between within-participant changes in self-compassion and disordered eating. Second, although we accounted for the influence of a potential confounding variable, self-esteem, our analyses do not permit causal inferences. Thus, it may be that engaging in disordered eating consequently decreases self-compassion.

Study 2 sought to build on Study 1 and address some of its limitations by assessing real-time associations between the key variables in a controlled laboratory setting. However, Study 2 also had a number of limitations. First, our measure of anticipated disordered eating was subject to self-report bias and may not be consistent with actual future eating

behavior. Second, analyses of reasons for actual restrained eating could only be conducted on the subset of participants who engaged in restrained eating, limiting statistical power. Third, our measure of laboratory-based restrained eating was not capable of capturing the types of disordered eating behaviors that occur in naturalistic settings and over longer time periods, such as fasting, bingeing, and purging. These types of behaviors were better captured in Study 1, making the two studies good complements to one another.

Finally, as in Study 1, the results of Study 2 could not speak to questions of causality. Because the self-compassion measure was completed prior to the disordered eating measures, it is unlikely that engaging in restrained eating motivated by weight concern or self-punishment, or reporting anticipated disordered eating, prompted participants to report lower self-compassion, but we cannot rule out the influence of unmeasured third party variables. Experimental research is therefore needed to examine whether inducing self-compassion leads to reductions in the dependent variables. A comprehensive, long-term intervention may be necessary to successfully increase appearance-related self-compassion, as appearance-related attitudes can be difficult to change (e.g., Tiggemann, 2004; Yager & O'Dea, 2008). Neff and Germer (2013) have developed a comprehensive self-compassion intervention that could be applied in the body image domain in future research. Furthermore, because the present studies were conducted in a sample of college-age females who were not selected for a history of disordered eating, future research should examine whether our findings generalize to other populations, such as males, older adults, younger adolescents, and those with an eating disorder diagnosis.

Conclusion

These studies are among the first to examine the relationships among self-compassion, body image, and self-reported eating behavior in naturalistic and lab-based settings. Taken together, our findings suggest that when it comes to body image disturbances and disordered eating behaviors, it is important to consider not only levels of self-esteem, but also the extent to which people are able to treat appearance-related flaws and failures with compassion rather than criticism. Although future research is needed, this research provides initial evidence that self-compassion may be a critical component in the successful prevention and treatment of body image disturbances and disordered eating behaviors, especially for women who are chronically critical of their appearance.

Notes

1. In both studies we also assessed body satisfaction (Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002), and in Study 2 we also assessed Body Mass Index (BMI). When body satisfaction and BMI were included as covariates, all analyses remained significant or increased in significance, with the exception of the supplementary group mean centered analyses reported in Study 1 (self-compassion became a marginally significant predictor of disordered eating, $p = .09$) and the analysis of self-compassion predicting weight-gain concern in Study 2 (self-compassion became a marginally significant predictor of weight-gain concern motives, $p = .08$). Controlling for body satisfaction, a known predictor of disordered eating (Stice, Mazotti, Krebs, & Martin, 1998), allowed us to address the alternative hypothesis that self-compassionate people are less ashamed of their bodies and less vulnerable to disordered eating when they experience a negative appearance-related event simply because they tend to be more satisfied with their appearance in general. Controlling for BMI allowed us to examine the alternative hypothesis that self-

compassionate people may also have lower BMIs and therefore feel less body shame or weight-gain concern.

2. Both studies 1 and 2 were originally designed to measure the effects of a brief self-compassion intervention, compared to self-esteem (Study 1) and neutral (Studies 1 and 2) control conditions. In both studies there were no differences in daily/state self-compassion or self-esteem across conditions, nor did any of the other dependent variables related to body image and disordered eating differ across conditions. It may be that our brief intervention was not prolonged or powerful enough to alter pre-existing individual differences. For this reason, we collapsed across conditions and focused on associations among variables. Controlling for condition did not change the results of either study. A measure of appearance perfectionism was also included in Study 1, and measures of body surveillance, exercise behavior, and reasons for exercise were assessed in Study 2, but they are not reported in the current manuscript. Readers interested in analyses involving these variables should contact the first author.
3. At the time of Study 1 data collection, we were not aware of the validated 12-item version of the Neff (2003b) self-compassion scale (Raes, Pommier, Neff, & Van Gucht, 2011). Items taken directly from the Raes et al. (2011) short version and adapted to a state body-relevant context were used in Study 2.
4. Reasons for eating chocolate (e.g., liking chocolate, being hungry, wanting to treat oneself) were also assessed but are not germane to the present investigation because they were not directly related to disordered eating.

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