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Comparing a Self-Compassion Intervention to a
Dissonance-Based Intervention for Body Image Distress

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Comparing a Self-Compassion Intervention to a Dissonance-Based Intervention for Body Image Distress

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An abstract of
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James T. Laney School of Graduate Studies of Emory University
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Abstract

Comparing a Self-Compassion Intervention to a Dissonance-Based Intervention for Body Image Distress

By Aubrey Michelle Toole

Given the high value placed on physical attractiveness for women, change-focused strategies may be limited in their ability to improve body image. Acceptance-focused self-compassion interventions may potentially be a more sustainable way to address body image distress (BID). The present study compared a novel self-compassion (SC) intervention for young adult women with BID to a change-focused dissonance-based (DB) intervention, as well as a no treatment control group. Each intervention was hypothesized to demonstrate a distinct pattern of effects on specific indices of BID, while both were expected to be equivalent on the general measure of body dissatisfaction and to be superior to no intervention. One hundred and fifty-one young adults endorsing body image concerns were randomized to a 1-week SC (n = 50) or DB intervention (n = 50), or to a waitlist (WL) control group (n = 51). Compliance was high and there was no atttrition. Contrary to hypotheses regarding specific effects, both interventions had similar effects on all body image indices except thin-ideal internalization (which was only reduced in the DB group). Both interventions were superior to no treatment on appearance-contingent self-worth, body appreciation, and body dissatisfaction; however, only the DB group was superior to no treatment on thin-ideal internalization. Somewhat surprisingly, both intervention groups showed significant increases in self-compassion from pre to post intervention. Also, within both interventions, improvement in self-compassion was significantly correlated with improvement in body image, suggesting that self-compassion may serve as a mechanism of change in both interventions. The rationale for the SC intervention was preferred, although compliance and the degree to which participants perceived the interventions to be helpful in improving body image did not differ between the groups. Results suggest that self-compassion and dissonance-based approaches are both helpful in addressing BID and it may be possible to integrate aspects of both interventions to improve acceptability and provide the greatest benefits.

Keywords: self-compassion, body image, dissonance, mindfulness, body dissatisfaction, body appreciation, body acceptance, thin-ideal internalization, appearance comparison

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Body image concerns are prevalent among young adult women and have consistently been implicated in the development and maintenance of maladaptive eating behaviors. Body dissatisfaction, which has been found to increase from adolescence to young adulthood (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013), is a well-established risk factor for disordered eating (Stice & Shaw, 2002) and affects quality of life even in the absence of clinically diagnosable eating pathology (Cohen & Petrie, 2005). Thus, the early young adult years may be an important period during which to target body image distress (BID) in order to prevent the emergence of and/or reduce the severity of eating pathology. Furthermore, BID is far more prevalent than diagnosed eating disorders, so addressing BID is important in and of itself, due to its impact on quality of life and its association with a number of negative mental and physical health outcomes such as depression (Jackson et al., 2014), social anxiety (Dakanalis et al., 2014), and low physical health related quality of life (Wilson, Latner, & Hayashi, 2013).

Defining Body Image

The term body image refers simply to the internal representation of one's physical appearance. Concerns related to body image manifest in a number of different ways. *Body dissatisfaction* encompasses "negative subjective evaluations of one's physical body" (Stice & Shaw, 2002). In women, body dissatisfaction is theorized to stem from perceived pressure to be thin and the resulting internalization of the thin-ideal standard of beauty (Stice, 2002). *Internalization of the thin-ideal* involves pursuing an unrealistic or unhealthy level of thinness (Stice, Rohde, & Shaw, 2012) which is propagated by western media. A more behavioral manifestation of body image concern is *upward appearance comparison*, or the tendency to compare one's appearance with the appearance of others deemed more attractive (O'Brien et al., 2009). Another facet of body image distress involves the degree of importance one places on one's physical appearance. *Appearance-contingent self-worth* reflects the degree to which one's self-worth is dependent on one's physical appearance (Crocker, Luhtanen, Cooper, & Bouvrette, 2003). All of these indices of negative body image are highly correlated, yet each provides unique information about body image. When referring to the array of concerns related to body image (e.g., body dissatisfaction, thin-ideal internalization, appearance-contingent self-worth, etc.), we use the general term

body image distress (BID). Body image disturbance is a term commonly used in the literature, but we prefer a label that reflects distress rather than disturbance, as the high normative value placed on managing ones' appearance (Jarry & Cash, 2011) makes it difficult to determine what should be considered "disturbed."

Until relatively recently, body image research typically focused on indices of negative body image and interventions sought to reduce body image distress. However, in more recent years, a positive body image literature has emerged (Piran, 2015). Consistent with the positive psychology movement's assertion that reducing illness does not necessarily enhance wellness (Gable & Haidt, 2005), it has become important to examine whether body image interventions boost positive body image in addition to reducing body image distress. Like BID, a number of indices of positive body image have been developed to capture its various manifestations (see Webb, Wood-Barcalow, & Tylka, 2015 for a compilation of measures). The construct of body appreciation was somewhat recently articulated and reflects a movement in the body image field toward a more nuanced understanding of positive body image. Specifically, *body appreciation* reflects acceptance of and respect for one's body independent of weight, shape, and perceived flaws; attunement to body needs; and refusal to buy into media ideals (Avalos, Tylka, & Wood-Barcalow, 2005). Body appreciation is positively correlated with body esteem/satisfaction, as well as non-appearance motivated physical activity, intuitive eating, optimism, proactive coping, and life satisfaction (Avalos et al., 2005; Homan & Tylka, 2014; Tylka & Kroon Van Diest, 2013).

Interventions for BID

Given the high rates of body image distress especially among young adult women in Western cultures, and the associated negative mental and physical health outcomes, new approaches to the treatment and prevention of BID warrant exploration. Such exploration is particularly important given that body image distress has been found to be difficult to reduce. A variety of interventions to reduce BID have been tested, but results have been modest and maintenance of effects has not yet been well

established (Alleva, Sheeran, Webb, Martijn, & Miles, 2015; Pearson, Follette, & Hayes, 2012; Yager & O'Dea, 2008).

In a recent meta-analysis, Alleva and colleagues (2015) examined the effectiveness of stand-alone body image interventions (i.e., interventions designed exclusively to address body image concerns). After publication and sample bias were corrected for, stand-alone interventions were found to produce minimal improvement in body image (i.e., effect sizes were small). The authors noted that they were unable to investigate relatively newer approaches, such as mindfulness-based interventions, due to a paucity of studies. They also did not include non-stand-alone body image interventions, such as interventions that aim to improve body image with the ultimate goal of preventing eating disorders.

Dissonance-based (DB) eating disorder prevention programs have yielded the strongest effects on body image to date (Stice, Shaw, Becker, & Rohde, 2008; Yager & O'Dea, 2008). These programs are based on the dual pathway model of eating pathology, which theorizes that disordered eating stems in part from body dissatisfaction, which itself is caused by internalization of the thin-ideal standard of beauty/attractiveness (Stice & Shaw, 2002). DB interventions, which are based on cognitive dissonance theory (Festinger, 1957), require participants to argue counter-attitudinally (orally, in writing, through "body activism" exercises, etc.) against subscribing to the thin-ideal. The discrepancy between participants' personal beliefs (e.g., that thinner is always better) and the arguments they make against pursuing thinness is theorized to cause discomfort, which is resolved by bringing one's personal beliefs more in line with the anti-thin-ideal statements, thereby reducing thin-ideal internalization (Stice et al., 2008). Evidence suggests that dissonance-based interventions produce reductions in thin-ideal internalization, which are associated with reductions in body dissatisfaction (typically showing medium sized effects), and that changes in these two variables mediate changes in reported disordered eating (typically showing small effect sizes; Stice, Marti, Rohde, & Shaw, 2011).

Dissonance-based eating disorder prevention programs have been designed to target young adult women and adolescent girls (Kilpela et al., 2016). These programs have been delivered face-to-face and online (ranging from 1 to 6 sessions), and have been facilitated by both professionals and trained peers.

Preliminary research suggests that effects on body dissatisfaction are similar across face-to-face and online delivery methods (Serdar et al., 2014). Peer led dissonance-based interventions have been found to produce similar significant effects on body image and eating outcomes (Becker, Smith, & Ciao, 2006). All formats include interactive exercises (oral, written, and/or behavioral) that lead participants to unsubscribe from, and then actively oppose, the thin-ideal standard of beauty/attractiveness.

Dissonance-based interventions have consistently been found to produce significantly stronger effects compared to non-DB interventions on body dissatisfaction and thin-ideal internalization (Stice et al., 2008). A review of the literature indicated that DB intervention effect sizes have ranged from small to large, with a medium effect size on average, and these effects have replicated across trials by up to six independent labs. However, the greater improvement on body image measures (compared to active control conditions) has generally faded over longer-term follow-up, suggesting limited maintenance of specific effects on body image (Stice et al., 2008). Thus, research is still needed to identify ways to produce more sustained body image improvement.

Body image interventions might well be categorized based on the degree to which they focus more heavily on change (e.g., challenging, problem-solving) or acceptance. Of course, the paradox is that acceptance facilitates change. Although advertised as body acceptance interventions, dissonance-based interventions are arguably more change-focused in their approach to reducing body image distress. The change promoted is to reject the thin-ideal, freeing individuals up to adopt a healthy ideal so that they can view their own body more positively. To some extent this approach also seeks to reduce the degree of importance placed on appearance more generally, but that is less directly challenged. This direct challenging/change focus is in contrast to approaches that are more heavily based on validating and accepting BID, with the goal of altering the way individuals cope with their distress around negative body image but not directly attempting to challenge their physical appearance ideals. Rather than directly reducing dissatisfaction or promoting body satisfaction, acceptance-focused approaches emphasize validation of the suffering associated with having a negative body image and challenge the importance of physical attractiveness more generally. The goal is to promote a sense of self-worth that is more

independent of perceived attractiveness (not just to reject the thin ideal) and to reduce the level of negative judgments regarding oneself or others. Importantly, one's awareness of one's own body image distress is also to be used to feel more connected to others (as opposed to feeling isolated or distancing oneself).

Self-compassion training (Neff & Germer, 2012) is an example of an acceptance-focused approach, which has recently been proposed as an alternative to more change-focused strategies designed to reduce body image dissatisfaction directly (Albertson, Neff, & Dill-Shackleford, 2014; Toole & Craighead, 2016). Importantly, while conceptualized as an acceptance-focused approach, greater self-compassion is generally associated with greater motivation to self-improve, supporting the theory that acceptance fosters change over stasis {Breines:2012ge}. Relating to oneself (and one's body) more compassionately is hypothesized to provide a more sustainable way of managing the *distress* associated with negative body image (compared to predominantly change-focused methods), given that appearance inevitably changes across the lifespan. Theoretically, learning how to relate to oneself (and one's body) compassionately should help women weather the barrage of body image messages and unattainable appearance ideals they will likely face throughout their lifetime.

Defining Self-Compassion

Self-compassion (SC) has been a fundamental component of Buddhist teachings for centuries, but has only relatively recently become a focus of scientific study. Put very simply, self-compassion is directing compassion towards oneself. It involves awareness and acceptance of one's flaws and inadequacies along with the understanding that such imperfections are part of being human. Self-compassion theory holds that it is more beneficial to approach imperfections with care and kindness than with harsh self-criticism (Neff, 2004). According to Neff (Neff, 2003a), self-compassion consists of three interconnected elements: mindfulness, self-kindness and common humanity. Within this framework, mindfulness involves a non-judgmental awareness and acceptance of one's thoughts and emotions. One must notice one's suffering in order to respond to it compassionately; however, Neff (Neff, 2003a) emphasizes that it is important for this awareness to be balanced, such that painful feelings are neither

ignored nor exaggerated. Self-kindness is to give oneself care and understanding (especially when confronted with personal short-comings, failures, and perceived flaws), as opposed to harsh judgment or self-criticism. Common humanity is the acknowledgement that imperfections are part of being human and that flaws and inadequacies make one more (rather than less) connected to others (Neff, 2003b).

Self-compassion may be particularly important in times of failure or disappointment, as these are often the times when individuals are most susceptible to self-judgment, shame and self-criticism. For many women, such thinking may arise when their body (or appearance more generally) fails to meet a certain ideal. Harsh self-criticism may amplify or prolong suffering; on the other hand, responding with self-compassion may provide relief and improve psychological wellbeing. Thus, self-compassion may be particularly well suited to address conditions that are driven by shame, self-criticism or perfectionism (Gilbert & Procter, 2006), tendencies that likely cause and/or maintain body image distress.

Self-compassion and body image. Self-compassion may be helpful in addressing body image distress because it promotes a more accepting and kind attitude towards one's flaws, including physical flaws. Instead of trying to alter participants' body image, self-compassion aims to promote greater self-awareness, self-kindness, and connection with others in the face of body image concerns. A growing body of literature suggests that self-compassion may serve as a protective factor against the development of negative body image and disordered eating (see Braun, Park, & Gorin, 2016 for review). Current research supports the notion that self-compassion is negatively associated with many indices of BID (e.g., Breines, Toole, Tu, & Chen, 2013; Daye, Webb, & Jafari, 2014; Ferreira, Pinto-Gouveia, & Duarte, 2013; Kelly, Vimalakanthan, & Miller, 2014; Mosewich, Crocker P, Kowalski, & Delongis, 2013). Although not the main goal, self-compassion is also hypothesized to foster a more positive body image, and has been reported to be positively associated with indices of body appreciation (Wasylkiw, MacKinnon, & MacLellan, 2012).

Self-compassion is therefore hypothesized to have the potential to improve a range of body image indices. The intent of self-compassion training is to reduce the tendency to judge oneself (either positively *or* negatively) and to promote the belief that self-worth transcends appearance and/or performance, better

equipping the individual to cope with threats to self-worth as they arise in the future. An individual's body image might well improve with self-compassion, but the target is to reduce the distress generated by body image concerns, which could be achieved whether or not body dissatisfaction is itself decreased. Thus, self-compassion training may indirectly promote a more positive body image and/or decrease body dissatisfaction, but the primary target is to make self-worth less contingent upon appearance.

Precursors to the Present Study

Research on self-compassion and body image has been primarily correlational in nature. However, three prior studies have investigated the impact of a self-compassion intervention on body image distress in women. The first was an Internet-based randomized controlled trial (RCT) which examined the effect of a 3-week self-compassion meditation training on body image (Albertson et al., 2014). Participants were primarily Caucasian (95%) adult women with body image concerns ranging in age from 18 to 60 (mean age of 37). Interestingly, age was correlated with baseline self-compassion and all but one body image variable assessed, with younger participants on average indicating lower levels of self-compassion and higher body image concerns. The women randomly assigned to the self-compassion intervention condition completed a daily 20-minute guided self-compassion meditation, for a total of 3 weeks (see Albertson et al., 2014 for a description of the meditations). Compared to the waitlist control group, participants in the self-compassion condition indicated significantly greater increases in self-compassion (large effect size) and body appreciation (medium-sized effect), along with significantly greater decreases in body dissatisfaction, body shame and appearance-contingent self-worth (with small to medium effects) following the intervention. These gains were maintained at 3-month follow-up. Limitations acknowledged by the authors included the absence of an active control group, the reliance on self-report to assess how often participants actually meditated, low racial and ethnic diversity, and a high attrition rate (roughly half of the participants).

Seeking to build upon and extend these findings, and also to address some of the aforementioned limitations, Toole and Craighead (2016) conducted a second self-compassion meditation training study. This study sought to explore whether certain modifications to the prior intervention (e.g., shortening the

duration from 3 weeks to 1 week and standardizing the initial training in the lab) might increase compliance and render the intervention more acceptable to college women. Young adult women were targeted based on Albertson et al.'s finding that body image concerns were higher and self-compassion was lower in the younger adult women. Consistent with Albertson et al.'s results, participants showed significantly greater pre-post change in body appreciation and appearance-contingent self-worth (as well as body surveillance, which was not assessed in the prior study) compared to no treatment controls (with small to medium-sized effects). In contrast to Albertson et al., significantly greater reductions in body shame and body dissatisfaction following training were not observed, perhaps because of the reduced exposure to the meditations, lower power due to a smaller sample size, or participant characteristics related to the high attrition in Albertson et al.'s study. Regardless, results demonstrated that very brief exposure to a self-compassionate orientation to one's body may be sufficient to start changing aspects of body image. Significantly greater improvement on (total) Self-Compassion Scale (Neff, 2003b) scores following training (compared to waitlist controls) was not observed, as was reported by Albertson et al. (2014), perhaps also because of the reasons noted above. However, exploratory analyses showed specific improvement following training on the negatively worded items of the SCS (i.e., the items tapping self-judgment, over-identification, and isolation; labeled the negative self-compassion factor by López et al., 2015) with a small effect. In contrast, the positively worded items (i.e., the items tapping self-kindness, mindfulness, and common-humanity; labeled the positive self-compassion factor by López et al., 2015) showed a non-specific response, meaning that the intervention and waitlist groups both improved, suggesting that those items may be more susceptible to demand characteristics.

Toole and Craighead's modifications to the Albertson et al. (2014) protocol did not prove to be sufficient to increase participant willingness to meditate on their own; only half of the participants did any further meditations following the initial 20-minute compassionate body scan meditation that was provided at the first lab visit. Nonetheless, attrition was very low and those who did not practice benefitted on average as much as those who had done further practice during the week. This finding suggested that perhaps even very brief exposure to taking a compassionate orientation toward one's body (exposure

ranged from about 20 to 90 minutes in this study) is sufficient to induce measurable changes in thinking, feeling, and/or behavior, such that practice frequency might not mediate improvements in body image, especially over the short time period assessed.

Participant responses to open-ended questions assessing acceptability indicated that a number of participants found the meditations too long and time-consuming. Additionally, some participants seemed to have experienced some fears of/resistance to the notion of giving oneself compassion (e.g., one participant expressed that she needed to be "hard on [her]self" to attain her appearance goals and could not "ease up" on her perception of her body). These observations led us to conclude that addressing fears of self-compassion at the outset and offering options for non-meditation-based practices to increase self-compassion might improve acceptability and effectiveness in this population.

To the best of our knowledge, this study was the first to examine the effect of self-compassion training on body image distress specifically in a sample of young adult women, a population particularly in need of help with these issues. Although the effect size of the self-compassion training in this study was fairly modest, the fact that such a brief intervention outperformed a waitlist control was promising.

More recently, Seekis, Bradley, and Duffy (2017) examined the effect of a single-session self-compassion writing task compared to a self-esteem writing task (and a no-intervention control group) on body image concerns in young adult women. They found that participants who completed the self-compassion writing task reported significantly higher state body appreciation compared to participants who completed the self-esteem writing task and controls (with a small effect). The self-compassion writing task involved brainstorming common ways in which young women experience body image concerns, writing about a body image scenario non-judgmentally, and writing a self-compassionate letter.

Although not exclusively self-compassion-based or focused on young adult women, one other recent intervention study is relevant to the present study. Rodgers et al. (2018) conducted a randomized controlled study of a mobile application (app) designed to promote positive body image in older adolescents (74% female). The app involved twice daily intervention messages including elements of self-compassion, media literacy, and healthy lifestyle information (in the form of an affirmation, a behavioral

tip, an activity, or psychoeducation), daily mood recording, and daily gratitude journaling, over the course of six weeks. Compared to a no treatment control group, participants who used the app reported significantly higher self-compassion and appearance esteem, with small effects. Although self-compassion was included as an intervention component and increased in app users relative to controls, it is unclear whether SC was the active ingredient, given the inclusion of media literacy and healthy lifestyle coaching. Thus, research is needed to compare self-compassion with alternative intervention approaches to better understand the unique effects of SC on body image and to identify potential mechanisms.

The Present Study

Findings from our prior study (Toole & Craighead, 2016) were promising and illuminated important avenues for future research. Since effect sizes for improvements in indices of body image distress were small, the self-compassion (SC) intervention was modified for the present study, in an effort to strengthen effects on body image. Modifications also aimed to improve compliance and acceptability/engagement and were evaluated to inform further development of such interventions. In addition to a waitlist (WL) control group, we compared the SC intervention to an active control group (a dissonance-based "DB" body image intervention, described in the Method section). We sought to explore whether self-compassion would provide a different pattern of benefits and/or if it would have equivalent effectiveness compared to a theoretically different intervention for BID, which was derived from previously studied dissonance-based interventions.

Rationale for self-compassion intervention components and design. Perhaps the most significant change to the prior intervention was the incorporation of non-meditation activities. Because many participants in the prior study reported disliking the meditations (due to their length, content, and/or frequency), the present intervention included additional strategies to enhance self-compassion, and offered meditation options that were shorter in duration. We turned to other self-compassion intervention studies to identify alternative self-compassion exercises to include in the present intervention.

Existing self-compassion interventions (beyond those exclusively designed for women with body image concerns) have varied widely in their duration (ranging from 3 to 8 weeks), format (online, mobile

app-based, face-to-face groups, workbook based, etc.), and intervention components. However, certain components have been used across trials. For example, self-compassion interventions have tended to offer psychoeducation about self-compassion (i.e. how it is distinct from self-esteem, self-pity, self-indulgence, etc.) and a self-compassionate letter writing exercise (Finlay-Jones, Kane, & Rees, 2016; Kelly & Carter, 2014; Neff & Germer, 2012; Seekis et al., 2017; Smeets, Neff, Alberts, & Peters, 2014). Some interventions have included daily prompts to be self-compassionate (Donovan et al., 2016; Rodgers et al., 2018), cultivation of a defined "self-compassionate mindset" (Kelly & Carter, 2014), and self-care activity scheduling (Finlay-Jones et al., 2016).

Drawing from these studies, the self-compassion enhancement exercises in the present study included self-compassionate letter writing, daily self-compassion intention setting (to cultivate a self-compassionate mindset), and daily self-care practices designed to foster self-compassionate behaviors (see Method section below for details). We sought to make this intervention more individualized, in keeping with the APA Presidential Task Force's (2006) evidence-based practice guidelines of incorporating patient values and preferences into treatment. This modified intervention gave participants the freedom to choose the specific self-compassion exercises they wanted to do each day with the goal of enhancing the intervention's acceptability to young adult women, and increasing engagement and compliance.

To reduce the possibility of expectancy effects, our prior study did not provide participants a strong rationale for self-compassion at the outset of the intervention (Toole & Craighead, 2016). However, it has been pointed out that psychoeducation is important as it provides a rationale for the intervention and may motivate participants to engage with the practices (Finlay-Jones et al., 2016). As mentioned above, a subset of participants in our prior study seemed to fear or actively resist the principles of self-compassion and could perhaps have benefitted from learning the intervention rationale in the beginning. Additionally, anecdotal evidence suggests that self-compassion may be enhanced through reading books or online articles about self-compassion (Neff & Germer, 2012), and thus psychoeducation by itself might boost self-compassion. Therefore, psychoeducation was included at the beginning of this

self-compassion intervention to enhance the cultivation of self-compassion, to improve compliance, and to reduce fears of self-compassion that might prevent individuals from engaging with the intervention. The psychoeducation component included didactic information about the benefits of self-compassion (drawn from the research) and the costs of harsh self-criticism and judgement.

As in our prior study, the intervention period for the present study was 1 week. The majority of participants in our prior study did not report a willingness or ability to continue the intervention for an additional 2 weeks (when asked hypothetically). For this reason, we kept the intervention duration 1 week, but added an additional week between pre- and post-test, to reduce the likelihood that changes reported at post-test might primarily reflect a short-term demand response. We also hoped to allow more time for the principles of self-compassion to consolidate.

Specific Aims

The aims and hypotheses of the present study were:

Aim 1: Intervention effects. The main aim of the present study was to compare the two interventions effects on body image. Our three primary hypotheses were as follows: 1) the SC intervention would be superior to the DB intervention on body appreciation and appearance-contingent self-worth, 2) the DB intervention would be superior to the SC intervention on thin-ideal internalization and upward appearance comparison, and 3) the two interventions would be equivalent in their effect on body dissatisfaction, a more general measure of body image concern. Self-compassion is theorized to increase a sense of intrinsic self-worth independent from one's perceived physical appearance, so we predicted that it would have a stronger effect on appearance-contingent self-worth. Body appreciation has been conceptualized as a self-compassionate way of relating to one's body given that it involves acceptance of and respect for one's body, as well as attunement to body needs (Toole & Craighead, 2016). Although it also includes a refusal to buy into media ideals, we anticipated that self-compassion's direct targeting of the other two components (through the daily intention setting and self-care practices) would produce stronger effects on body appreciation than the DB intervention. In contrast, we predicted that participants in the DB group would report greater reductions in thin-ideal internalization than the SC

group, since the specific focus of the DB intervention was on challenging the thin-ideal, whereas self-compassion aims to help individuals to cope with appearance ideals without necessarily challenging them. We also anticipated that the DB intervention would more strongly impact upward appearance comparison, given its direct focus on challenging appearance ideals. Finally, we predicted that both interventions would have a similar effect on a more general measure of body dissatisfaction, given that both approaches have been found to reduce body dissatisfaction (e.g., Albertson et al., 2014; Stice et al., 2008).

Our secondary hypothesis was that both intervention groups would be superior to the WL group on all body image measures (body appreciation, appearance-contingent self-worth, upward appearance comparison, thin-ideal internalization, and body dissatisfaction).

Aim 2: Potential moderators. As an exploratory aim, we investigated variables hypothesized to moderate improvements in body image in each intervention. Specifically, we predicted that baseline levels of self-compassion (in the SC group) and thin-ideal internalization (in the DB group) would moderate each intervention's effects on body image. Since research has consistently documented a negative relationship between self-compassion and body image distress (see Braun et al., 2016 for review), we expected that individuals lower in self-compassion at baseline would experience higher levels of body image distress and as a result would have more room to improve and benefit more from the SC intervention. In the DB group, we predicted that baseline levels of thin-ideal internalization would moderate improvements in body image, as research suggests that dissonance-based intervention effects are stronger in individuals with higher initial levels of thin-ideal internalization (Müller & Stice, 2013).

Aim 3: Potential mechanisms of change. We also sought to explore potential mechanisms of change within each intervention. We predicted that in the SC group, improvements in the negative self-compassion factor would be positively associated with improvements in body image. Preliminary evidence suggests that self-compassion serves as a mechanism of change in SC interventions (Albertson et al., 2014; Neff & Germer, 2012). In our prior study, changes in total Self-Compassion Scale (Neff, 2003b) scores were not associated with changes in indices of body image distress; however, exploratory analyses indicated that changes in the negative SC factor were associated with changes in all indices of

negative body image. Thus, we analyzed each of the self-compassion factors separately. In the DB intervention group, we predicted that improvement (i.e. reduction) in thin-ideal internalization would be positively associated with improvements in indices of BID, since thin-ideal internalization has been identified as a mechanism of change in dissonance-based interventions (Stice et al., 2011; Stice, Presnell, Gau, & Shaw, 2007).

Aim 4: Acceptability and compliance. We expected both interventions to be feasible (i.e., to achieve high compliance and low attrition) and we expected the SC intervention to be at least as acceptable as the DB intervention (and possibly more acceptable). We hypothesized that young women would be reluctant to let go of the thin-ideal and might therefore be more willing to engage in an intervention labeled as self-compassion focused. Compliance and acceptability were expected to be high within the SC group, due to the explicit targeting of fears of self-compassion at the outset of the study, and the more flexible daily practice options.

Method

Participants

Participants were recruited from the introductory psychology subject pool at Emory, as well as through flyers posted around campus and nearby neighborhoods, and advertisements shared with university listservs and Facebook groups. The study advertisement solicited women who were experiencing concerns about their weight/shape/body image for participation, and the project was described as a study evaluating interventions designed to improve body image.

Participants included in the present report were the first 151 young adults between the ages of 18 and 25 (M_{age} = 19.70, SD = 1.85) to be recruited within a larger project designed to recruit 200 participants. Mean body mass index (BMI) based on self-reported height and weight was 23.67 kg/m^2 (SD = 4.46). See Table 1 for a breakdown of demographics by group for the present sample. All but one participant (who was of the female sex, but identified as non-binary) were cisgendered women. Because body image distress (as conceptualized in this study) affects primarily girls and women (Striegel-Moore et al., 2009), and due to concerns that we would likely be unable to recruit enough men to have adequate power to evaluate

potential gender differences, men were not recruited for participation in this study. Research also suggests that body image distress may manifest differently in men (Grossbard, Lee, Neighbors, & Larimer, 2008), which would require alternative assessment measures.

Procedure

All participants attended one laboratory session (approximately 30 minutes for the waitlist and 75 minutes for the active conditions). Two weeks later, participants completed post-intervention measures via an online survey (a link was emailed to them). Participants in the intervention groups were instructed to complete the daily intention-setting and home practices for at least 1 week following the initial lab visit; they were free to continue engaging with the intervention materials throughout the second week (and beyond) if desired.

Initial lab visit. All participants completed baseline self-report measures on a computer (see Measures below). Depending on their group assignment (self-compassion, dissonance-based, or waitlist control), participants completed the initial intervention procedures or were informed that they would receive the intervention materials via email in 2 weeks. Subject pool participants were provided 2 research participation credits immediately upon completing the initial lab visit (paid participants received all compensation at the conclusion of their study participation).

Post-test questionnaire. Two weeks after completing their laboratory visit, all participants were emailed a link to a survey containing the post-intervention measures. These were the same questionnaires as administered at pre-intervention (with the exception of the demographic questions). Those in the intervention groups were additionally asked to report on their subjective experiences of the intervention they had received through questions assessing acceptability. Participants in the control group were provided with the self-compassion intervention materials after completing the post-test questionnaire. Subject pool participants were provided with 2 additional research participation credits for completing the post-test questionnaire and participants recruited from flyers or advertisements were sent a $25 gift card via email.

Intervention Conditions

The self-compassion and dissonance-based interventions were designed to be parallel in their structure. Both included an initial lab-based psychoeducation orientation and a writing exercise completed by all participants individually (i.e., not in a group format), as well as one week of daily practices and intention-setting. The content of each component, however, varied by intervention, as described below.

Self-compassion intervention. After completing all baseline self-report measures on the computer, participants randomized to the self-compassion group viewed a 2-minute video created for the study. In this video, they received psychoeducation about the costs of harsh self-criticism and its link to body image distress and other problems and were introduced to the concept of self-compassion as an alternative way of relating to oneself. Following this video, the experimenter answered any questions participants had and provided them with a handout containing descriptions of the three components of self-compassion (see Appendix A). They were able to take notes on the handout (if desired), and were instructed to take it home with them to refer back to during the week. Then, each participant watched a 12-minute video entitled "Overcoming Objections to Self-Compassion" which is also freely available online (https://www.youtube.com/watch?v=YFhcNPjIMjc). In this video, Kristin Neff, PhD, addresses fears of/resistance to giving oneself compassion. Participants were given links to both videos, in case they wanted to re-watch them during the following week. Participants then completed a self-compassionate letter exercise (based on https://ggia.berkeley.edu/practice/self_compassionate_letter, see Appendix B). Prior to writing their own letter, participants read an example letter (see Appendix C for the example). Letters were hand written and a copy was retained by the experimenter. Participants were given the original to take home and were encouraged to re-read their letter often throughout the week and to add to it if desired.

Next, participants received instructions about how to continue cultivating a self-compassionate mindset after leaving the lab. Adapted from Kelly and Carter (Kelly & Carter, 2014, p. 293) the self-compassionate mindset was described as (a) encouraging yourself with care, strength, wisdom, and warmth to engage in the behaviors that will promote long-term physical and emotional health and wellbeing; (b) understanding and empathizing with your struggles to accept your body and treat yourself

compassionately; and (c) forgiving yourself if you do engage in unhealthy or harmful behaviors, or harsh self-criticism/judgment. Then, participants learned how to set a daily intention to be compassionate with themselves and to complete daily "self-care" practices to put their intentions to action. They were given a list of possible intentions and a collection of self-care practices (their "self-care toolkit"; see Appendix D for lists of examples, some of which were adapted from the prompts used in Donovan et al., 2016). It was emphasized to participants that the particular self-care practice chosen mattered less than the intention behind it (i.e., to care for themselves and attend to their physical/emotional needs through their practice). Participants were instructed to set a self-compassionate intention and complete at least one self-care practice of their choosing per day for the next 7 days. They were informed that they would receive a daily email for the next seven days, which would include a link to a questionnaire that would document their daily intention and self-care practice. These questionnaires prompted participants with specific intentions and practice ideas each day, and also included space for participants to write their own. These daily questionnaires took less than five minutes to complete.

Dissonance-based intervention. It is important to note that although the present dissonance-based intervention was inspired by and contained elements of an empirically supported DB intervention (*The Body Project*, see Stice, Rohde, & Shaw, 2012), it was different in key ways. *The Body Project* is run in a group format, allowing participants to role play arguments against the thin-ideal and make public counter-attitudinal statements. The present intervention was conducted individually and was self-guided and shorter in duration, but it was based on the same principle that challenging the thin-ideal leads to body image improvement.

Participants randomized to the dissonance-based group received psychoeducation about the thin-ideal and the costs of pursuing it (i.e., its link to body image distress and other problems), as well as the benefits of challenging and rejecting it. This was delivered via a 12-minute video created for the study (video script was adapted from *The Body Project* four-session manual, see Stice, Rohde, & Shaw, 2012). Participants had the opportunity to take notes on the video if desired, using a handout which included a description of the thin-ideal and costs of pursuing it, as well as the video link. Participants were able to

take this handout home with them (see Appendix E). Participants then hand wrote a counter-attitudinal letter against pursuing the thin-ideal. They were instructed to address their letter to a younger girl struggling with body image concerns and to inform her about the costs of pursuing the thin-ideal, following *The Body Project* protocol (see Appendix F for instructions). Prior to writing their own letter, participants read a de-identified example letter which was written by a participant in *The Body Project* and freely available online at https://projects.ori.org/bodyacceptanceletters/letters.html. Letters were hand written and a copy was retained by the experimenter. Participants were given the original to take home and were encouraged to re-read their letter often throughout the week and to add to it if desired.

Participants then received instructions about how to set a daily intention to reject the thin-ideal (see Appendix G for examples). Second, they received a "body activism tool kit" consisting of practices to challenge the thin-ideal, adapted from *The Body Project* manual's list of "body activism" ideas (see Appendix G). Participants then received the same instructions as the SC group about documenting their daily intentions and practices via daily online questionnaires.

Waitlist control group. After completing all baseline self-report measures on the computer, participants randomized to the waitlist control group were informed that they had been randomly assigned to receive their intervention materials two weeks later. They were told that they would receive a second questionnaire via email two weeks after their initial lab visit, which would include the body image intervention materials at the end.

Measures

Demographics/background information. All participants self-reported their age, year in school, height, weight, race, ethnicity, current level of proficiency in English, current and lifetime psychiatric diagnoses (including eating disorders), current and prior mental health treatment, and experience with meditation and self-compassion.

Self-compassion. The Self-Compassion Scale (SCS; Neff, 2003b) is a 26-item measure of trait self-compassion. It assesses the three dimensions of self-compassion: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. Participants were asked

to indicate how often they typically act in the manner described in each item (e.g., "I try to be loving towards myself when I'm feeling emotional pain") on a 5-point scale (1 = *Almost never*, 5 = *Almost always*). Scale items were averaged to obtain an overall score, with higher scores reflecting greater self-compassion. Evidence of construct validity and test-retest reliability has been reported in a college student population (Neff, 2003a). Cronbach's alpha was .90 in our sample.

Given recent research indicating that the SCS has a two-factor structure (e.g., López et al., 2015), our analyses examined each of the factor scores separately, in addition to the total score. Following the method of López et al. (2015), the items tapping self-kindness, mindfulness, and common humanity were summed to form what has been labeled the *positive* self-compassion factor and the items tapping self-criticism, over-identification, and isolation were summed to form what has been labeled the *negative* self-compassion factor. Cronbach's alphas were .89 and .91 for the positive and negative SC factors, respectively.

Fear of self-compassion. The Fear of Self-Compassion subscale of the Fears of Compassion Scale (FCS; Gilbert, McEwan, Matos, & Rivis, 2011) is a 15-item measure assessing fears of being compassionate to oneself. Participants were asked to rate their agreement with each item on a 5-point scale (0 = *Don't agree at all*, 4 = *Completely agree*). It includes items such as, "I fear that if I become too compassionate to myself I will lose my self-criticism and my flaws will show." Gilbert et al. (2011) reported evidence of construct validity and internal consistency in a university student sample. Cronbach's alpha was .91 in our sample.

Appearance-contingent self-worth. The Contingencies of Self-Worth Scale – Appearance Subscale (CSW-A; Crocker et al., 2003) is a five-item measure assessing the degree to which self-esteem or self-worth depends on one's perceptions of one's appearance. Participants were asked to rate their agreement with each item (e.g., "My sense of self-worth suffers whenever I think I don't look good") on a 7-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*), and items were averaged to obtain an overall score with higher scores indicating greater appearance-contingent self-worth. Crocker et al. (2003)

reported evidence of construct validity, internal consistency, and test-retest reliability in a sample of college students. Cronbach's alpha was .73 in our sample.

Body appreciation. The Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015) is a 10-item measure of positive body image. It asks participants to consider how often they typically feel favorably about their bodies, accept their bodies, treat their bodies with respect (e.g., through healthy behaviors), and maintain a positive body image by rejecting harmful media messages (Avalos et al., 2005). Items (e.g., "I appreciate the different and unique characteristics of my body") are rated on a 5-point scale (1 = *Never*, 5 = *Always*) and were averaged to obtain an overall score with higher scores reflecting greater body appreciation. Tylka and Wood-Barcalow (2015) reported evidence of construct validity, test-retest reliability, and internal consistency in an undergraduate student sample. Cronbach's alpha was .92 in our sample.

Thin-ideal internalization. The Sociocultural Attitudes towards Appearance Questionnaire 4 – Internalization: Thin/Low Body Fat subscale (SATAQ-4; Schaefer et al., 2015) was used to assess thin-ideal internalization. This subscale consists of 5 items which evaluate the degree to which participants desire to have a thin body with little body fat (e.g., "I would like my body to look very thin"). Items are rated on a 5-point scale (1 = *Definitely disagree*, 5 = *Definitely agree*), and scores were averaged to obtain an overall score, with higher scores indicating greater thin-ideal internalization. Schaefer et al. (2015) reported evidence of reliability and convergent validity in a sample of undergraduate women. Cronbach's alpha was .67 in our sample.

Upward appearance comparison. The Upward Appearance Comparison Subscale (UPACS) of the Upward and Downward Appearance Comparison Scale (UDACS; O'Brien et al., 2009) is a 10-item measure which evaluates the degree to which one tends to compare one's appearance to others deemed more attractive (e.g., "At parties or other social events, I compare my physical appearance to the physical appearance of the very attractive people"). Participants were asked to rate each item on a 5-point scale (1 = *Strongly disagree*, 6 = *Strongly agree*). Scale items were averaged to obtain an overall score, with higher scores indicating greater upward appearance comparison. O'Brien et al. (2009) reported evidence

of construct validity and internal consistency in a sample of first year university students. Cronbach's alpha was .88 in our sample.

Body dissatisfaction. The Body Shape Questionnaire-Revised-10 (BSQ-R-10; Mazzeo, 1999) is a 10-item scale that measures concerns about body shape and body dissatisfaction, in particular the subjective experience of "feeling fat." Participants were asked to rate how often they had been feeling the way each item describes (e.g., "Have you found yourself brooding about your shape?") on a 6-point scale (1 = *Never*, 6 = *Always*). Scale items were averaged to obtain an overall score, with higher scores reflecting greater body dissatisfaction. At pre-intervention, the standard instructions of "over the past 4 weeks" were used and at post-intervention, participants were instructed to base their responses on their feelings since their initial lab visit, to assess just the intervention period. Mazzeo (1999) reported evidence of internal consistency and construct validity in samples of college women. Cronbach's alpha was .94 in our sample.

Self-esteem. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is a 10-item measure of global trait-level self-esteem. Participants rated their agreement with each item (e.g., "I feel that I have a number of good qualities") on a 4-point scale (1 = *Strongly agree*, 4 = *Strongly disagree*). Scale items were averaged to obtain an overall score, with higher scores reflecting greater self-esteem. Robins, Hendin, and Trzesniewski (2001) reported evidence of construct validity, test-retest reliability, and internal consistency in an undergraduate sample. Cronbach's alpha was .89 in our sample.

Acceptability and compliance. Both prior to knowing their group assignment and at post-test all participants were given a brief description of the two interventions and asked (hypothetically) which one they would be more interested in participating in. Their response had no bearing on their actual group assignment. At post-test, the two intervention groups also completed a questionnaire assessing their experience participating in the intervention to which they were assigned. Questions assessed the perceived helpfulness of the intervention as a whole, as well as the various intervention components (i.e., the psychoeducational videos, daily home practices and daily intention-setting). Participants were also asked to rate their preference for enrolling in the intervention to which they were assigned compared to more

traditional psychotherapy/treatment. Compliance was assessed through self-reported estimates of practice frequency at post-intervention.

Results

Preliminary Analyses

As shown in Table 1, of the 151 participants who were randomized to study condition, 50 participants were assigned to the SC group, 50 participants were assigned to the DB group, and 51 participants were assigned to the WL group. Study retention was high; all participants responded to the post-test questionnaire. However, one participant's questionnaire was incomplete. This participant was included in analyses using the intention-to-treat procedure (i.e., pre-intervention data were carried forward and used in place of the missing post-test data). A small percentage (0.12%) of items on the questionnaires were left blank by participants and Little's MCAR test suggested that the data were missing completely at random (MCAR). Missing items were replaced by the sample mean score for each item. There were some instances of outliers and abnormality in the data, discussed below with the corresponding affected analyses.

Group differences on baseline measures. To determine if randomization created equivalent groups at baseline, one-way analyses of variance (ANOVAs) and chi-square tests were used to test differences between the three groups on demographic characteristics, mode of compensation, and baseline measures. These analyses indicated no significant differences between groups. There were also no differences at baseline between paid volunteers and subject pool participants on demographic variables or body image concerns, with the exception of age. Participants who received course credit were significantly younger on average (M_{age} = 18.73, SD = 0.96) than those who were paid for their participation (M_{age} = 20.88, SD = 1.98), $F(1, 149) = 75.71$, $p < .001$. Descriptive statistics for all measures at baseline by group are presented in Table 2.

Correlations between measures at baseline. Pearson correlation coefficients were computed between each of the dependent variables at baseline (see Table 3). Significant correlations were found among all body image variables. Of note, self-compassion (the total score) was significantly negatively

correlated with all negative body image measures and significantly positively correlated with body appreciation. The opposite relationship was found for fear of self-compassion, which was significantly positively correlated with all negative body image measures, and significantly negatively correlated with body appreciation.

Intervention compliance. Level of compliance reported was similar in both in both intervention groups.

SC group compliance. Participants in the SC group reported completing their daily practice an average of 6.69 days (range: 3 to beyond 7 days, *SD* = 0.96) and setting an intention an average of 6.71 days (range = 2 days to beyond 7 days, *SD* = 1.17). The modal number of days for practice and intention setting was 7 days.

DB group compliance. Participants in the DB group reported completing their daily practice an average of 6.22 days (range: 2 days to beyond 7 days, *SD* = 1.42) and setting an intention an average of 6.28 days (range: 1 day to beyond 7 days, *SD* = 1.43). The modal number of days for practice and intention setting was 7 days.

Manipulation Check

To assess whether the SC intervention was successful in increasing self-compassion and reducing fear of self-compassion, paired samples *t*-tests were run to assess pre-post change in self-compassion within each group. Results indicated that total SCS pre-post change was significant for the SC group, $t(49) = -7.51$, $p < .001$, $d = -1.06$, showing a significant increase in self-compassion from pre- to post-test with a large effect size. Unexpectedly, the DB group also showed a slightly smaller but still sizable increase in self-compassion, $t(49) = -5.50$, $p < .001$, $d = -0.79$. WL controls did not change significantly, $t(50) = -1.80$, $p = .078$. Follow-up within group *t*-tests, done on the positive and negative SC factor scores separately, indicated that both the SC and DB groups showed reductions on the negative SC factor (ps < .001); however, only the SC group showed significant improvement on the positive SC factor, $t(49) = -5.61$, $p < .001$. The WL group showed no change on either factor (ps > .05). With regard to fear of self-compassion (FSC), the SC group evidenced a significant decrease in FSC from pre to post with a

medium-sized effect, $t(49) = 3.005$, $p = .004$, $d = 0.44$. The DB group showed no change in FSC, $t(49) = 1.34$, $p = .19$, and the WL group showed a significant *increase* in FSC from pre to post, $t(50) = -2.31$, $p = .025$.

Aim 1: Intervention Effects

To assess the efficacy of the two interventions (compared to each other and to waitlist controls), analyses of covariance (ANCOVAs) were run on post-test outcome measures, controlling for pre-intervention scores. Although there is no universally agreed upon method for analyzing pre-post data in clinical research, ANCOVA models have been argued to be optimal due to their higher power and lower variance compared to linear mixed modeling (LMM) or analyses of change scores (see O'Connell et al., 2017)for comparison of methods and review of the literature). Although LMM is becoming the method of choice for analyzing longitudinal data with more than one post-baseline set of measurements, for simple pretest-post-test data, ANCOVA is still recommended (O'Connell et al., 2017). Since we planned to run ANCOVAS for each of the five body image outcome variables (appearance-contingent self-worth, body appreciation, thin-ideal internalization, upward appearance comparison, and body dissatisfaction), a Šidák correction was used, establishing an alpha level of .01 for each of the ANCOVAs. See Table 4 for ANCOVA results and the adjusted (non-centered) means for outcomes by condition.

Partial η^2 (η_p^2) is the effect size reported for the ANCOVAs; conventional benchmarks for η_p^2 are .01 for a small effect, .06 for a medium effect, and .14 for a large effect (Green & Salkind, 2010). Effect sizes for pairwise comparisons are presented with Cohen's *d*; conventional benchmarks for Cohen's *d* are 0.2 for a small effect, 0.5 for a medium effect, and 0.8 for a large effect (Cohen, 1988). Effect sizes and *p* values for each pairwise comparison are displayed in Table 5.

Appearance-contingent self-worth. Our hypothesis was that the SC group would evidence significantly lower appearance-contingent self-worth at post-test compared to the DB group and that both groups would be superior to WL. Assumptions of linearity, homogeneity of regression slopes, and homogeneity of variance were all met. There were no outliers on appearance-contingent self-worth, as assessed by no cases with standardized residuals greater than +/-3 standard deviations. Standardized

residuals for the self-compassion group and for the overall model were not normally distributed, as assessed by Shapiro-Wilk's test (*p*s = .031 and .011, respectively); however, since ANCOVA is considered to be fairly robust to deviations from normality, and visual inspection of the Q-Q plots of the standardized residuals revealed no major deviations, we proceeded with the ANCOVA analysis. After adjustment for pre-intervention appearance-contingent self-worth scores, there was a significant difference in post-test appearance-contingent self-worth scores across the three groups $F(2, 147) = 5.77$, $p = .004$, with a medium effect size ($\eta_p^2 = .073$).

SC versus DB. After adjustment for pre-intervention scores, post-test appearance-contingent self-worth did not differ between the SC and DB groups, with a mean difference of 0.10, 95% CI [-0.37, 0.56], $p = .905$. Thus, our hypothesis that the SC group would be superior to the DB group in its effect on appearance-contingent self-worth was not supported.

Intervention groups versus waitlist. After adjustment for pre-intervention scores, the SC group showed significantly lower post-test appearance-contingent self-worth than the WL group, with a mean difference of -0.40 and a medium-sized effect, 95% CI [-0.85, 0.05], $p = .031$, $d = 0.53$. The DB group also showed significantly lower post-test appearance-contingent self-worth compared to the WL group, with a mean difference of -0.50 and a medium-sized effect, 95% CI [-0.96, -0.04], $p = .005$, $d = 0.65$. Therefore, our hypothesis that the two groups would be superior to WL was supported.

Body appreciation. Our hypothesis was that the SC group would evidence significantly higher body appreciation at post-test compared to the DB group and that both groups would be superior to WL. Assumptions of linearity, homogeneity of regression slopes, and homogeneity of variance were all met. There was one outlier on body appreciation, as assessed by cases with standardized residuals greater than +/-3 standard deviations. This participant was removed from the analysis (although results were the same when the outlier was included). Prior to removal, standardized residuals for the self-compassion group were not normally distributed, as assessed by Shapiro-Wilk's test ($p = .023$); however, residuals in all groups were normally distributed following removal (*p*s > .05). Standardized residuals for the overall model were normally distributed, both including and excluding the outlier.

After adjustment for pre-intervention body appreciation scores, there was a significant difference in post-test body appreciation scores across the three groups $F(2, 146) = 5.58$, $p = .005$, with a medium-sized effect ($\eta_p^2 = .071$).

SC versus DB. Contrary to our hypothesis, the SC group did not show significantly higher body appreciation compared to the DB group. Post intervention body appreciation did not differ between the SC and DB groups, with a mean difference of 0.04, 95% CI [-0.19, 0.27], $p = .941$, $d = 0.10$.

Intervention groups versus waitlist. After adjusting for pre-intervention scores, post-test body appreciation was significantly higher in the SC group compared to the WL group, with a mean difference of 0.24 and a medium-sized effect, 95% CI [0.01, 0.47], $p = .007$, $d = 0.63$. The DB group was also significantly higher than the WL group on post-test body appreciation, with a mean difference of 0.20 and a medium-sized effect, 95% CI [-0.03, 0.43], $p = .03$, $d = 0.52$. Therefore, our hypothesis that the two groups would be superior to WL was supported.

Thin-ideal internalization. We hypothesized that the DB group would evidence significantly lower thin-ideal internalization at post-test compared to the SC group and that both groups would be superior to WL. There was one outlier on thin-ideal internalization, as assessed by standardized residuals greater than +/-3 standard deviations. This outlier was removed from the following analyses. Assumptions of linearity, homogeneity of variance, and normality were all met; however, because the assumption of homogeneity of regression slopes was violated, $F(2, 144) = 3.21$, $p = .043$, we were unable to proceed with the ANCOVA and needed to specify the baseline level of thin-ideal internalization when describing the effect of group. To address this, we used a model that estimated separate slopes for each group. Following the method outlined by Johnson (2016) and the UCLA Statistical Consulting Group, we compared each group to each other group at three different levels of baseline thin-ideal internalization (representing the 25th, 50th, and 75th percentile scores on the SATAQ-4 Internalization: Thin/Low Body Fat subscale). See Figure 1 for a graphical depiction of the heterogeneous slopes for the following analyses.

SC versus DB. The SC and DB groups did not significantly differ in post-test thin-ideal internalization across low (contrast estimate = 0.05, $p = .739$, $d = 0.08$) and moderate (contrast estimate = 0.30, $p = .023$, $d = 0.50$) levels of baseline thin-ideal internalization. However, at high levels of baseline thin-ideal internalization, the DB group evidenced significantly lower post-test thin-ideal internalization than the SC group, with a medium-large effect size (contrast estimate = 0.44, $p = .003$, $d = 0.74$), thus partially supporting our hypothesis that the DB group would evidence significantly lower thin-ideal internalization compared to the SC group.

Intervention groups versus waitlist. The SC and WL groups did not differ significantly in post-test thin-ideal internalization at low (contrast estimate = 0.003), moderate (contrast estimate = 0.008), or high (contrast estimate = 0.012) levels of baseline thin-ideal internalization (ps = .93 to .99, ds < 0.02). The DB and WL groups did not significantly differ in post-test thin-ideal internalization at low (contrast estimate = -0.05, $p = .736$, $d = 0.08$) levels of baseline thin-ideal internalization; however, at moderate (contrast estimate = -0.28, $p = .027$, $d = 0.47$) and high (contrast estimate = -0.43, $p = .005$, $d = 0.72$) levels of baseline thin-ideal internalization, the DB group evidenced significantly lower post-test thin-ideal internalization than the WL group, with a medium to medium-large effect. Thus, only the DB intervention had a significant effect on thin-ideal internalization, and only for participants with moderate to high initial levels of thin-ideal internalization.

Upward appearance comparison. We hypothesized that the DB group would show significantly lower upward appearance comparison at post-test compared to the SC group and that both groups would be superior to WL. Assumptions of linearity, homogeneity of regression slopes, and homogeneity of variance were all met. However, standardized residuals for the SC and DB groups (ps = .003 and .001) and for the overall model ($p < .001$) were not normally distributed, as assessed by Shapiro-Wilk's test. Furthermore, visual inspection of the Q-Q plots of the standardized residuals, as well as histograms, revealed moderate negative skew. There was one outlier on upward appearance comparison, as assessed by standardized residuals greater than +/-3 standard deviations; after removing this participant from the analysis, the SC group's standardized residuals were normally distributed, but the DB group and overall

model were still significantly negatively skewed. We attempted two different transformations: a reflect and square root (indicated for moderately negatively skewed data) and reflect and logarithmic (indicated for strongly negatively skewed data; Statistics.laerd.com, n.d.); however, neither were able to remedy the problem of non-normality. Since ANCOVA is considered to be fairly robust to deviations from normality, we proceeded with the ANCOVA analysis using the non-transformed data (with the outlier omitted); however, results should be interpreted with caution.

After adjustment for pre-intervention upward appearance comparison scores, the overall F did not reach the adjusted level of significance that had been established, $F(2, 146) = 3.60$, $p = .030$. Thus, follow-up tests comparing the intervention groups to each other were not conducted. This result did not support our hypothesis that the DB group would show greater reductions in upward appearance comparison and that both intervention groups would report lower upward appearance comparison than WL controls.

Body dissatisfaction. We hypothesized that both intervention groups would be equivalent in their effect on the general measure of body dissatisfaction at post-test, and that both would be superior to the waitlist group. Assumptions of linearity, homogeneity of variance, and normality were all met and there were no outliers in the data; however, the assumption of homogeneity of regression slopes was violated, $F(2, 145) = 3.35$, $p = .038$. Therefore, as with thin-ideal internalization (described above) we could not proceed with the ANCOVA and instead needed to specify the baseline level of body dissatisfaction when describing the effect of group. We compared each group to each other group at three different levels of baseline body dissatisfaction (representing the 25th, 50th, and 75th percentile scores on the BSQ-R-10). See Figure 2 for a graphical depiction of the heterogeneous slopes for these comparisons.

SC versus DB. The SC and DB groups did not significantly differ in post-test body dissatisfaction across low (contrast estimate = -0.13, $p = .56$, $d = 0.14$), moderate (contrast estimate = 0.13, $p = .49$, $d = 0.14$) or high (contrast estimate = 0.45, $p = .066$, $d = 0.50$) levels of baseline body dissatisfaction, supporting our hypothesis that the two interventions would have a similar effect on body dissatisfaction.

Intervention groups versus waitlist. The SC and WL groups differed significantly in post-test body dissatisfaction at all levels of baseline body dissatisfaction, with medium sized effects: low (contrast estimate = -0.48, $p = .03$, $d = 0.53$), moderate (contrast estimate = -0.53, $p = .004$, $d = 0.58$), and high (contrast estimate = -0.59, $p = .013$, $d = 0.65$). The DB and WL groups did not significantly differ in post-test body dissatisfaction at low levels of baseline body dissatisfaction (contrast estimate = -0.35, $p = .11$, $d = 0.39$); however, at moderate (contrast estimate = -0.66, $p < .001$, $d = 0.73$) and high (contrast estimate = -1.04, $p < .001$, $d = 1.15$) levels of baseline body dissatisfaction, the DB group evidenced significantly lower post-test body dissatisfaction compared to WL, with medium to large effects. Therefore, our hypothesis that both intervention groups would show lower body dissatisfaction compared to WL was only partially supported, with the data suggesting that the DB intervention was no better than WL for participants with initially low levels of body dissatisfaction.

Aim 2: Exploring Potential Moderators

Aim 2 explored baseline level of self-compassion (in the SC group) and thin-ideal internalization (in the DB group) as potential moderators of each intervention's effects on body image. To assess this aim, repeated-measures ANOVAs were conducted (separately for each intervention group) for each body image variable (body dissatisfaction, body appreciation, appearance-contingent self-worth, and upward appearance comparison) with time (baseline score, post-test score) as the within-subjects factor and baseline SCS total score (for the SC group) or SATAQ-4 Internalization: Thin/Low Body Fat subscale score (which assessed thin-ideal internalization, for the DB group) as the covariate. Moderation would be indicated by a significant interaction between time and baseline score.

Self-compassion group. Contrary to predictions, self-reported self-compassion (total score) did not moderate the effect of the intervention for any of the four body image variables investigated ($ps > 05$). We also explored post hoc whether either of the self-compassion factor scores or fear of self-compassion moderated the effect of the intervention on body image; however, no significant interactions were observed ($ps > .05$). Therefore, improvements in body image following the SC intervention did not differ based on how self-compassionate participants reported they were at baseline.

Dissonance-based group. In partial support of our predictions, baseline self-reported thin-ideal internalization moderated the effect of the DB intervention on body dissatisfaction, $F(1, 48) = 5.01$, $p = .030$, $\eta_p^2 = .094$, but did not moderate the effect of the intervention on the other body image variables assessed (body appreciation, upward appearance comparison, or appearance-contingent self-worth). In other words, in the DB group individuals high on thin-ideal internalization at baseline evidenced larger reductions in body dissatisfaction than those low on baseline thin-ideal internalization.

Aim 3: Exploring Potential Mechanisms of Change

For Aim 3 we explored the association between pre-post change on the various variables to identify potential differential mechanisms of change within each intervention to inform future research. To examine these relationships, Pearson correlation coefficients were computed between change scores for the body image variables (body appreciation, body dissatisfaction, appearance-contingent self-worth, upward appearance comparison) and the change scores for each SC factor (for the SC group) and for the thin-ideal internalization measure (for the DB group). We used the factor scores rather than the total SCS score based on indications from prior research that the factors might function differentially. Change scores were calculated by subtracting the baseline score from the post-test score.

Self-compassion group. We predicted that, within the SC group, reductions in the negative SC factor from pre- to post-test would be associated with improvements on body image measures. This hypothesis was partially supported by a significant correlation between change on the negative SC factor and changes on two of the body image variables: change in body appreciation ($r = -.38$, $p = .006$), as well as change in upward appearance comparison ($r = -.38$, $p = .006$). Further exploration revealed that improvement in the positive SC factor score was significantly associated with decreases in body dissatisfaction ($r = -.38$, $p = .007$) as well as upward appearance comparison ($r = -.40$, $p = .004$). Neither factor was associated with change in appearance contingent self-worth or thin-ideal internalization. These correlations indicate that within the SC condition, greater change on each SC factor was associated with greater reduction in upward appearance comparison. However, change on the negative factor was

associated with greater change in body appreciation, whereas greater change on the positive factor was associated with greater change in body dissatisfaction (see Table 6).

Dissonance-based group. Within the DB group, we predicted that improvement (i.e., reduction) in thin-ideal internalization from baseline to post-test would be positively correlated with improvements in body image variables. However, reduction in thin-ideal internalization was not significantly correlated with change on any of the body image variables (see Table 7).

Since self-compassion showed an unanticipated increase in the DB group as well as in the SC group, we ran post-hoc tests to see if change in self-compassion was associated with change in body image variables within the DB group as well. Interestingly, change in self-compassion was significantly correlated (ps < .05) in the expected direction with four of the five body image variables, suggesting the possibility that SC functions as a mechanism of change in both interventions (see Table 7).

Practice effects. To explore whether the number of daily intentions set or practices completed were associated with greater improvements in body image or self-compassion, Pearson correlation coefficients were performed (for the two intervention groups separately) between the self-reported practice/intention-setting frequency and change scores in self-compassion and body image (computed by subtracting the baseline from the post-test score). No significant correlations were observed (ps > .05), suggesting no relationship between practice (when assessed via self-report) and intervention effects.

Aim 4: Exploring Intervention Acceptability

Intervention preferences. At baseline, after reading brief descriptions of each intervention, more participants reported that they would prefer the SC intervention (n = 103, 68.2%) than reported that they would prefer the DB intervention (n = 30, 19.9%), whereas a few indicated no preference (n = 8, 11.9%). Looking within groups at post-test, 27 of the 31 SC participants who initially preferred SC (and received what they preferred) continued to report a preference for SC, whereas 17 then indicated no preference and 5 indicated at that point that they would prefer the DB intervention. In comparison, 10 of the 12 participants in the DB group who initially preferred the DB intervention (and received what they preferred) continued to report a preference for DB, 29 indicated they would prefer the SC intervention,

and 11 indicated no preference. This finding suggested that the majority of participants found the rationale for SC more appealing, even most of those who had participated in the DB intervention and on average had rated it as helpful. WL participants did not change their initially stated preferences which had been 72.5% preferring SC and 11.8% preferring DB.

Intervention engagement. We ran *t*-tests to compare compliance across the two intervention groups. No significant differences were observed between rates of daily practice and intention setting across the two groups (*p*s > .05), with both groups evidencing high compliance (an average of 6 to 7 daily practices completed and intentions set for both groups, see Compliance section above).

Helpfulness ratings at post-test. To test the hypothesis that these brief interventions would be rated as helpful, as well as (hypothetically) preferable to alternative, more intensive treatment options that an individual could seek out, we ran *t*-tests to compare responses to the acceptability items across the two intervention groups. The two groups did not differ in average levels of agreement with the statement "Participating in this study improved my body image" (*p*s > .05). Participants also rated the helpfulness of the videos and letter-writing activities similarly across the two conditions (*p*s > .05). Some important differences did emerge when looking at helpfulness ratings of the daily practices and intentions. Participants in the SC group showed significantly higher mean helpfulness ratings for the daily practices (M_p = 4.40, SD_p = 0.74) and intentions (M_i = 3.88, SD_i = 1.05), compared to the DB group (M_p = 3.48, SD_p = 1.09, $t_p(94)$ =4.82, $p < .001$; M_i = 3.37, SD_i = 1.06, $t_i(96) = 2.40$, $p = .019$). Participants in the SC group also reported significantly higher agreement with the statement "I would recommend this type of intervention approach to other young women with similar problems or concerns" (M = 4.16, SD = 0.72), compared to the DB group (M = 3.82, SD = 0.80), $t(97) = 2.25$, $p = .027$.

Discussion

The present randomized controlled trial was designed to explore whether modifications to a brief self-compassion intervention (see Toole & Craighead, 2016) might strengthen its effects on body image distress (BID) and render the intervention more acceptable to young adult women, a population that is particularly vulnerable to BID. We also sought to compare the self-compassion (SC) intervention to an

alternative approach based on the principles of cognitive dissonance (DB intervention), as well as to a waitlist (WL) control group. The DB intervention included elements from previously studied dissonance-based interventions (see Stice et al., 2008), but was modified in format and duration to match the characteristics of the brief SC intervention. Both interventions were essentially self-guided, consisting of an individual lab-based session plus instructions for daily intentions and practices to be done over the course of the subsequent week.

Summary of Findings

Results indicated that the modified self-compassion intervention was rated as acceptable by participants and some indices suggested that a self-compassion approach may be a more appealing option for this population than a DB approach. The SC interevention did increase self-reported self-compassion (and also reduced fears of self-compassion) from pre to post intervention (large effect sizes). Contrary to hypotheses that the two interventions would show some differential specific effects, the SC and DB groups did not significantly differ on four of the five indices of body image. For thin-ideal internalization, neither intervention was beneficial for individuals initially endorsing low levels on the measure; however, the DB intervention was more effective than SC in reducing thin-ideal internalization for individuals with initially higher levels of endorsement. The effects of the DB intervention were (non-significantly) stronger than SC for the four indices of body image *distress*, while the SC intervention showed (non-significantly) stronger effects for the positive measure, body appreciation. Within the SC group, change in self-compassion (the hypothesized mechanism of action for the SC intervention) was correlated with improvement on four of the five body image outcomes, but within the DB group, thin-ideal internalization (the hypothesized mechanism of action for the DB intervention) was not associated with improvements on the other body image measures. Post hoc analyses indicated that change in self-compassion was associated with change in body image within both active treatments, suggesting that it may have functioned as a mechanism of change in the DB intervention as well as in the SC intervention. This finding led us to conclude that, for future research, the two interventions might be integrated in some way to maximize acceptability and benefits.

Intervention Effects on Self-Compassion

The modified self-compassion intervention led to significant increases on the total score of the self-compassion measure with a large effect size. Of note, this overall effect was driven by improvement on both the positive and negative factor scores. The prior version of the current self-compassion intervention (see Toole & Craighead, 2016) had demonstrated improvement solely on the negative SC factor. Thus, the modifications to the self-compassion intervention appeared to enhance the intervention's effects particularly on the positive elements of SC (self-kindness, mindfulness, and common humanity). It was also notable that the effects on the positive SC factor did not appear to be a result of nonspecific effects (as had been the case in the prior study), as no significant change was reported by those in the WL group. It is also possible that higher compliance compared to the prior study, which likely reflected the increased acceptability of the modified (non-meditation based) intervention, strengthened the effects on the positive factor. The SC group also evidenced significant decreases in fear of self-compassion (with medium-sized effects), suggesting that the psychoeducation added at the beginning of the intervention (in an effort to reduce fears of/resistance to self-compassion) was successful.

Somewhat surprisingly, the DB intervention also led to similar, significant increases in self-compassion, with a large effect size. However, within the DB group the effect was driven by reduction in the negative SC factor, rather than by increases in the positive factor. Although self-compassion was not mentioned in the DB intervention, we did notice there were some compassionate statements in the counter-attitudinal letters that participants in the DB group wrote (discussed below). Perhaps writing words of encouragement to a younger girl reduced participants own feelings of isolation, self-judgement, and overidentification with their difficulties, issues tapped by the negative SC factor items.

Comparing Interventions

Our primary hypotheses were that the SC intervention would be superior to the DB intervention on body appreciation and appearance-contingent self-worth (variables expected to be targeted most directly by SC), while the DB intervention would be superior to the SC intervention on thin-ideal internalization and upward appearance comparison (variables expected to be targeted most directly by a

dissonance approach). Contrary to predictions, the two intervention groups did not significantly differ in their effect on any body image measure except thin-ideal internalization. The DB intervention led to significantly lower thin-ideal internalization compared to SC, but only for participants who started out with high thin-ideal internalization at baseline. Benefits from the DB intervention appeared to be somewhat stronger than SC on appearance contingent self-worth and body dissatisfaction (again for participants with higher baseline levels of body dissatisfaction). Benefits from SC appeared to be somewhat stronger on body appreciation. Therefore, in the short-term, the relatively more change-focused dissonance-based approach might be better suited to reduce negative indices of body image, whereas the relatively more acceptance/validation-focused self-compassion approach might be better able to foster positive body image. It is important to note, however, that elements of acceptance *and* change are inherent in both approaches. Both approaches were rated as helpful and appeared to be less distinct than we had initially conceptualized.

Comparing the Intervention Groups to No Treatment

Our secondary hypothesis was that both groups would be effective in reducing BID/improving body appreciation (i.e., both would be superior to no treatment). This hypothesis was mostly supported.

Appearance-contingent self-worth. Both SC and DB groups reported significantly lower appearance-contingent self-worth than the WL group, with medium-sized effects. With regard to the SC group, this result is consistent with the results from our prior study, which reported a significant decrease in appearance-contingent self-worth for that study's meditation-based SC intervention, with a small effect size. Together these results support the conclusion that both interventions produce at least a modest decrease in appearance-contingent self-worth. These findings fit with the theory of self-compassion, which suggests that SC enhances a sense of intrinsic self-worth that is independent from perceived attractiveness, but this improvement in the DB intervention was less expected. One prior study found that an intervention challenging sociocultural appearance norms led to lower appearance-contingent self-worth in adolescent girls (Strahan et al., 2007). This finding suggested a causal link between sociocultural appearance ideals and appearance-contingent self-worth and led the investigators to posit that challenging

such ideals reduces the tendency to base self-worth on how closely one's appearance lives up to ideals. This same process might have been at work in the present DB intervention.

Body appreciation. Also as predicted, both interventions led to significantly higher body appreciation than no intervention, with medium-sized effects. Comparing SC to WL, the effect size was of similar magnitude to Toole and Craighead (2016) and Albertson et al. (2014) and supports the conceptualization of body appreciation as a self-compassionate orientation to one's body. Since self-compassion also increased in the DB group, it makes sense that body appreciation increased within DB participants as well. Furthermore, the construct of body appreciation includes rejection of media ideals (Avalos et al., 2005), so this aspect was likely enhanced by the DB intervention. This finding aligns with the results of a recent investigation of a dissonance-based intervention for adolescent girls, which also produced improvements in body appreciation relative to no intervention (Halliwell, Jarman, McNamara, Risdon, & Jankowski, 2015).

Thin-ideal internalization. The hypothesis that the DB intervention would effectively reduce thin-ideal internalization was partially supported. Participants in the DB group with high baseline levels of thin-ideal internalization evidenced significantly lower thin-ideal internalization at post-test compared to those in the WL group, with a medium-large effect size (similar in size to effects typically reported for DB inteventions). However, for participants with lower baseline thin-ideal internalization, DB was not superior to WL. These findings are somewhat consistent with the literature in that DB interventions typically do reduce thin-ideal internalization (e.g., Stice et al., 2008), but the results also suggest that the present DB intervention was not sufficient to engender significant change for those with lower initial levels of thin-ideal internalization. The DB intervention in this study did *not* include role plays in a group setting, which may have reduced its effectiveness for those already reporting low levels. The SC intervention simply did not reduce thin-ideal internalization, supporting the conclusion that self-compassion may alter how women cope with sociocultural pressures to meet a certain appearance ideal, without necessarily changing the extent to which they buy into that ideal.

Upward appearance comparison. Since the overall ANCOVA was not significant for this measure, the intervention groups were not considered to be different from each other or from WL.

Body dissatisfaction. As predicted, compared to WL controls, participants in the SC group reported significantly lower body dissatisfaction at post-test (across all levels of baseline body dissatisfaction), with medium-sized effects. The DB intervention also produced significantly lower post-test body dissatisfaction (with medium to large effects), but only for participants with moderate to high baseline body dissatisfaction. For participants with low initial levels of body dissatisfaction there was no difference between DB and WL groups. These findings are consistent with literature indicating that DB interventions lead to lower body dissatisfaction (e.g., Stice et al., 2008), but the finding also suggests that the present form of the DB intervention may not be useful (or cost effective) for those with low initial body dissatisfaction. The superiority of the SC intervention compared to WL across all levels, combined with the somewhat higher stated preference for SC, suggests that SC may be viewed as a somewhat more acceptable approach to intervention when participants are not selected on the basis of elevated concerns. The general effectiveness of the SC intervention was fairly consistent with Albertson et al. (2014), which reported a decrease in body dissatisfaction compared to controls following a 3-week self-compassion meditation intervention. Of note, the current SC intervention showed a slightly larger (although still medium-sized) effect following only one week of intervention. This medium effect size for the SC intervention (compared to WL) on body dissatisfaction suggests that the modifications made to the earlier intervention enhanced its effectiveness. In that prior SC intervention, body dissatisfaction had not been significantly reduced compared to waitlist controls (Toole & Craighead, 2016).

Exploring Potential Moderators and Mechanisms

SC intervention. Within the self-compassion group, we sought to determine participant characteristics associated with greater benefits and to identify variables associated with change in body image to inform future research about potential mechanisms. Contrary to our predictions, baseline self-compassion did not moderate the effects of the intervention on body image. In other words, participants who were initially lower in self-compassion did not benefit more from the intervention. We also explored

post-hoc whether fear of self-compassion might moderate the effects of the intervention on body image. We posited that such fears might pose a barrier to engagement with the intervention, leading participants with higher initial fear of SC to benefit less. However, moderation was not observed. Because self-compassion intervention research is in its infancy, no prior studies (to the best of our knowledge) have explored moderators of intervention effects on body image variables; however, self-compassion has been found to moderate relationships between negative body image variables in correlational studies (e.g., Tylka, Russell, & Neal, 2015; Webb, Fiery, & Jafari, 2016). It is possible that self-compassion's moderating effect may have been too small to detect with the present study's power and therefore self-compassion (and fear of self-compassion) should not be ruled out as possible moderators in higher powered trials.

With regard to variables associated with change in body image, we hypothesized that reductions in the negative SC factor scores (tapping isolation, self-judgment, and overidentification) would be associated with improvement in body image indices. In partial support of this hypothesis, we found that participants who reported greater decreases in the negative SC factor reported greater improvements in body appreciation and greater reductions in upward appearance comparison. Post hoc analyses revealed that participants who reported greater increases in the positive SC factor reported greater decreases in both body dissatisfaction and upward appearance comparison. These results suggest that both positive and negative aspects of SC may be mechanisms of change for the effects of the intervention on some aspects of body image; however, causal inferences cannot be made based on correlations. Future studies with greater power are needed to investigate the possible role of the positive and negative SC factors as mediators of self-compassion intervention effects.

DB intervention. We hypothesized that individuals with higher initial levels of thin-ideal internalization would benefit more strongly from the DB intervention than those with low baseline levels. This hypothesis was partially supported; baseline thin-ideal internalization moderated the effect of the DB intervention on body dissatisfaction (with a medium-sized effect), but not on other indices of body image.

This finding is somewhat consistent with research suggesting that dissonance-based intervention effects are stronger in individuals with higher initial levels of thin-ideal internalization (Müller & Stice, 2013).

We had also predicted that change in thin-ideal internalization would be associated with change in body image, suggesting its possible role as a mechanism through which the DB intervention would affect change in body image. However, inconsistent with our hypothesis and prior research (Stice et al., 2011; Stice et al., 2007), no significant association was found between change in thin-ideal internalization and change in any body image measure used. It is important to note that the 5-item measure used to assess thin-ideal internalization in this study (the SATAQ-4 thin/low body fat subscale; Schaefer et al., 2015) showed somewhat lower than optimal internal consistency and may not have been sufficiently sensitive to short-term change. Although the present measure has been used to assess thin-ideal internalization in prior dissonance-based intervention studies (e.g., {Halliwell:2015jm}; Kilpela et al., 2016; {Matusek:2004eh}), it differs from the 10-item measure used by Stice and colleagues (the Ideal-Body Stereotype Scale-Revised; Stice, Schupak-Neuberg, Shaw, & Stein, 1994), which may be more sensitive to change.

Although change in thin-ideal internalization has been found to mediate the effect of dissonance-based interventions on body image in prior studies, perhaps different mechanisms were at work in the present intervention. Interestingly a post-hoc exploratory analysis indicated that, within the DB group, change in self-compassion was correlated with change in all body image variables except appearance-contingent self-worth. Combined with the finding that self-compassion also significantly increased in the DB group, this finding supports the conclusion that self-compassion may have served as a mechanism through which the present DB intervention improved body image; however, higher powered studies are needed to analyze self-compassion's role as a mediator of intervention effects.

Acceptability and Compliance

With regard to acceptability, at both baseline and post-test, more participants (across the entire sample) expressed a preference for participating in the SC intervention compared to the DB intervention. This finding suggests that self-compassion-based programs may have more initial appeal for young adult

women with body image concerns; they may be more likely to seek out and sign up for interventions promoting self-care, acceptance, and compassion over interventions described as challenging or resisting sociocultural pressures. In further support of this notion, participants in the SC group rated the helpfulness of the daily practices and intentions significantly higher on average than participants in the DB group and they reported a higher likelihood of recommending the intervention to other young women with similar concerns. However, there were no differences between groups on other measures of acceptability (i.e., questions assessing the helpfulness of the psychoeducational videos and letter-writing activities, and questions gauging the perceived helpfulness of the intervention for improving body image). Thus, both interventions were genereally well accepted and rated as helpful. With regard to engagement, there were no differences between self-reported rates of daily practice and intention setting across the two groups, and both groups reported high compliance with the daily activities. Thus, while the SC intervention was viewed as more appealing by young women volunteering for a study on BID for which they would receive either course credit or modest compensation, participants engaged in and responded well to both interventions.

Strengths, Limitations, and Future Directions

The present study has a number of strengths that build upon prior body image intervention research. It is the first randomized controlled trial to compare the effects of a self-compassion intervention to a dissonance-based intervention as well as a waitlist control group on body image distress. By including an active control group, we were able to provide some control for the possibility of a non-specific or placebo effect. Comparing two active treatments allowed us to investigate possible differential patterns of benefits across different theoretical approaches (i.e., acceptance and change focused).

This novel self-compassion intervention was very feasible to implement and highly acceptable to participants, with no attrition and high ratings of helpfulness and compliance with the daily intervention activities. The larger effect sizes for this intervention compared to our prior study (Toole & Craighead, 2016) suggest that within the same amount of time (i.e., 1 week) stronger effects may be obtained with the addition of psychoeducation (providing a strong intervention rationale and proactively addressing

fears of self-compassion) and options for non-meditation based self-compassion practices. The short-term, self-guided nature of this SC intervention suggests that it may be a cost-effective and easily disseminable method for addressing body image concerns in a population of young adult women.

The benefits observed in the DB group were noteworthy. A few online or internet-based dissonance programs have been developed and found to produce small to large effects on thin-ideal internalization and body satisfaction/dissatisfaction (see Stice, Rohde, Durant, & Shaw, 2012; Stice, Rohde, Shaw, & Gau, 2017; Serdar et al., 2014); however, those programs were more time-intensive than the DB intervention in this study, and were group-based (e.g., three 1-hour group sessions or six 30- to 40-minute modules over the course of three weeks, using text messaging to facilitate group interaction). Group formats are thought to be important for dissonance-based intervention delivery, since they allow members to role play counter-attitudinal arguments with each other. We are aware of only one prior study utilizing an online individually-delivered single session DB intervention (comprised of a definition of the thin-ideal, brainstorming about its costs and consequences, and focusing on positive aspects of one's body). That intervention had no effect on body image, which the authors speculated may have been due in part to the individual/non-group format (Pennesi & Wade, 2018). Therefore, the fact that the present DB intervention produced medium to large effects on body image over the course of just one week of self-guided practice is striking. This finding suggests that the combination of psychoeducation/media literacy about the thin-ideal, counter-attitudinal letter writing, and daily intention setting/practices to challenge the thin-ideal, even when delivered individually, has the potential to yield results comparable to more intensive group-based internet-delivered (or even in-person) programs (Stice et al., 2017).

Several limitations are also noted. Although a week was added after the intervention before the post assessment was completed (compared to the Toole & Craighead, 2016 procedure), the present study did not include follow-up assessments, due to limitations in resources. Prior research suggests that improvements in self-compassion and body image may be maintained for three months post-intervention (Albertson et al., 2014) and there is some evidence that very short-term (i.e., from a single 2-hour group session) DB intervention effects on body dissatisfaction and thin-ideal internalization remain significant

at 1-month follow-up (Matusek, Wendt, & Wiseman, 2004). However, without follow-up data in the present study, it is not possible to know whether detected effects were maintained or possibly even strengthened over time, and whether any changes over time might emerge providing more differentiation between the two groups on rate of change and/or sustained effects. We might predict that self-compassion, which can be applied to other areas of difficulty beyond body image and does not require constant challenging of sociocultural appearance ideals, might produce longer lasting benefits than DB. On the other hand, the somewhat stronger initial effects of the DB intervention on the negative body image measures could argue for a greater likelihood of sustained effects with a DB approach. Thus, future research is needed to compare the sustainability of DB and SC intervention effects.

The present study also lacked an inert non-waitlist control group. As a result, we are unable to rule out the possibility that obtained effects were simply due to participating in any activity purported to help with negative body image. Although prior research suggests that psychoeducation is not very effective in improving body image (see Yager & O'Dea, 2008) future research could include a psychoeducation only or a reflective listening-type condition in addition to a waitlist control group, to investigate whether improvements are specific to the active ingredients of the interventions.

Given that the DB intervention showed stronger effects on negative body image indices, while the SC intervention was deemed slightly more acceptable and yielded stronger effects on positive body image (body appreciation), a combined approach might well be considered and might provide the greatest benefits. One preliminary dismantling study of a dissonance-based eating disorder prevention program suggested that counter-attitudinal advocacy alone (defined as "an exercise in which the participant must argue against thin-ideal messages," p. 4) was as efficacious as the full intervention package (which includes psychoeducation and behavioral exposure activities; Roehrig, Thompson, Brannick, & van den Berg, 2006). Thus, perhaps the inclusion of counter-attitudinal advocacy within a self-compassionate framework might be the most acceptable and efficacious approach.

Interestingly, upon review of the counter-attitudinal letters that participants in the DB group wrote, we observed a number of statements that could be construed as reflecting a compassionate

mindset. Although participants were not writing to themselves (so this was not a *self*-compassion exercise per se), evidence of elements of compassion in the letters is noteworthy and suggests that the counter-attitudinal advocacy may have extended beyond providing arguments against the thin-ideal to making a case for greater self-compassion. Examples of elements of compassion in the statements included: *you are not alone; you are loved; you are enough; you are supported for who you are; accept yourself; learn to love yourself with your heart; eat healthy foods but don't forget to treat yourself*; and *you simply need…self-compassion, and a healthy realistic mentality*. It is possible that while writing their letters participants were imagining themselves in adolescence and what they would have needed to hear at that time, which would arguably be a self-compassionate exercise. Writing an encouraging letter to an adolescent girl might also have fostered a sense of interconnectedness that would reflect the common humanity aspect of self-compassion.

On the other hand, the self-compassionate letter-writing activity completed by SC participants might be construed as a dissonance-induction exercise. Asking potentially self-critical participants to write compassionate statements to themselves may have served as a counter-attitudinal exercise, leading participants to bring their (possibly more critical) internal beliefs about themselves in line with their kind and caring self-statements. Therefore, as noted previously, the two interventions may have been less distinct than originally conceptualized and this might explain some of the similarities in their effectiveness.

With regard to the self-compassionate letters participants in the SC group wrote, we noticed that some participants were able to write letters that seemed to reflect a strong understanding of the three components of self-compassion which had been identified in their psychoeducational material. Those letters included statements such as the following: *Remember to think about the things you love about yourself when you feel down; I'm worried because this self-criticism you have been expressing is not healthy for you; this is a problem that SO MANY other women struggle with constantly; be compassionate with yourself and treat yourself as someone for whom you care deeply*. However, it was clear that others had more difficulty expressing compassion to themselves, even though they were

instructed to do so (and had read an example letter prior to writing their own). We noticed that some letters even included harsh self-critical statements such as: *That stomach needs to go, so do those thighs; stop skipping meals because that won't make your skinnier; it's pretty stupid that you're so obsessed with your own flaws*. The heterogeneity in the degree of self-compassion expressed in these letters was striking and suggests that writing samples might serve as an interesting, potentially more unobtrusive means to assess levels of self-compassion. Such an assessment might be less subject to social desirability bias or demand effects than traditional self-report rating scales. We are interested in developing a coding scheme for these letters in order to assess the degree to which self-compassion expressed in writing would correlate with Self-Compassion Scale (Neff, 2003b) scores.

Another avenue for future research is to examine other potential moderators of the self-compassion intervention to determine characteristics of participants who might benefit most. For instance, it may be important to explore whether individuals from different racial groups or cultural backgrounds respond differently to self-compassion. Unfortunately, the sample size and demographics of the present study did not allow us to investigate these questions. It will also be important for future research to continue to explore mechanisms of change in self-compassion interventions for body image. A larger sample size will be needed to conduct formal mediation analyses, which could further investigate the possibly differential roles of the positive and negative factor scores of the Self-Compassion Scale (López et al., 2015).

A few other future directions are worth mentioning. Given that body image distress is strongly associated with disordered eating (Stice & Shaw, 2002), future research could investigate whether this self-compassion intervention model might prevent or reduce disordered eating in addition to BID. A more intensive and/or longer intervention would likely be necessary, however, to affect meaningful change in eating behaviors. Also, as primarily young adult cisgender women (with the exception of one participant who identified as non-binary) were included in the present study, research that includes different age ranges and individuals of a range of different genders and sexual identities is needed to determine the degree to which these findings would generalize to other groups of individuals.

Conclusion

To the best of our knowledge the present study was the first to compare the effect of self-compassion on body image to an alternative intervention based on cognitive dissonance, an approach with an established evidence base. In summary, the self-compassion intervention was found to reduce a number of aspects of body image distress and to promote a more positive body image in young adult women and these women generally found brief, self-guided exposure to self-compassionate practices to be acceptable and helpful. The two interventions were fairly similar in terms of their effects on indices of body image, but the self-compassion rationale appeared to be more appealing. The dissonance-based intervention produced somewhat stronger effects on indices of negative body image, whereas the self-compassion intervention produced somewhat stronger effects on the measure of positive body image. Within both interventions, change in self-compassion emerged as a possible mechanism of action worth further investigation. Thus the two interventions may not be as distinct as initially conceptualized. Therefore, combining elements from both approaches with the more appealing label of/rationale for self-compassion might be expected to yield the greatest benefits as well as to improve acceptability.

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Table 1

Baseline Demographics of the Participant Sample by Group

	SC Group (n = 50)		DB Group (n = 50)		WL Group (n = 51)	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Age	19.38	*(1.41)*	19.90	*(1.95)*	19.82	*(2.10)*
BMI	22.88	*(4.51)*	24.06	*(4.45)*	24.06	*(4.41)*
	n (%)		*n* (%)		*n* (%)	
BMI Categories						
Underweight (< 18.5)	2 (4)		1 (2)		3 (5.9)	
Healthy range (18.5-24.9)	40 (80)		33 (66)		31 (62.7)	
Overweight (25-29.9)	4 (8)		10 (20)		11 (21.6)	
Obese (30.0+)	4 (8)		6 (12)		5 (9.8)	
Student Status						
Undergrad	48 (96)		45 (90)		42 (82.4)	
Fifth Year/Grad Student	2 (4)		5 (10)		7 (13.7)	
Non-Student	0 (0)		0 (0)		2 (3.9)	
Ethnicity						
Hispanic/Latinx/Spanish Origin	4 (8)		4 (8)		5 (9.8)	
Race						
White/Caucasian	25 (50)		19 (38)		22 (43.1)	
Black/African American	1 (2)		6 (12)		9 (17.6)	
Asian/Asian American	18 (36)		16 (32)		17 (33.3)	
Multi-Race	5 (10)		6 (12)		3 (5.9)	
Other	1 (2)		3 (6)		0 (0.0)	
History of an ED	7 (14)		1 (2)		4 (7.8)	
Current Psychological Treatment	6 (12)		6 (12)		10 (19.6)	
Current Meditation Practice	6 (12%)		7 (14%)		5 (9.8%)	

Note. *n* = number of participants endorsing each demographic variable; SC = self-compassion; DB = dissonance-based; WL = waitlist; BMI = Body Mass Index; ED = eating disorder.

Table 2

Baseline Means and Standard Deviations of Measures by Condition

	SC Group (n = 50)		DB Group (n = 50)		WL Group (n = 51)	
Measures	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
SCS Total	2.42	0.59	2.54	0.62	2.49	0.46
Positive Factor	2.63	0.66	2.86	0.73	2.83	0.53
Negative Factor	3.79	0.67	3.78	0.70	3.85	0.59
Fear of SC	1.65	0.90	1.49	0.95	1.50	0.78
CSW-A	5.86	0.78	5.50	0.81	5.81	0.89
BAS-2	2.85	0.72	3.00	0.75	2.94	0.76
SATAQ-4	3.84	0.80	3.67	0.67	3.67	0.89
UPACS	4.15	0.60	3.85	0.72	4.02	0.67
BSQ-R-10	4.36	1.18	4.29	1.13	4.26	1.26
RSES	2.69	0.58	2.68	0.57	2.65	0.50

Note. SC = self-compassion; DB = dissonance-based; WL = waitlist; CSW-A = Contingencies of Self-Worth Scale – Appearance Subscale; BAS-2 = Body Appreciation Scale-2; SATAQ-4 = Sociocultural Attitudes Towards Appearance Questionnaire-4: Internalization - Thin/Low Body Fat Subscale; UPACS = Upward Appearance Comparison Scale; BSQ-R-10 = Body Shape Questionnaire-Revised; RSES = Rosenberg Self-Esteem Scale.

Table 3

Pre-intervention Bivariate Pearson Correlations Between Study Variables

Measure	SCS Total	Pos SC Factor	Neg SC Factor	FSC	BAS-2	SATAQ-4	CSW-A	UPACS
Pos SC Factor	.86**	-	-	-	-	-	-	-
Neg SC Factor	-.86**	-.48**	-	-	-	-	-	-
FSC	-.53**	-.43**	.49**	-	-	-	-	-
BAS-2	.60**	.61**	-.43**	-.42**	-	-	-	-
SATAQ-4	-.20*	-.13	.21*	.16*	-.33**	-	-	-
CSW-A	-.33*	-.19*	.37**	.20*	-.34**	.34**	-	-
UPACS	-.34**	-.25**	.33**	.33**	-.30**	.41**	.55**	-
BSQ-R-10	-.36**	-.29**	.33**	.32**	-.61**	.50**	.46**	.43**

Note. $N = 151$. SCS Total = Self-Compassion Scale total score; Pos SC Factor = positive self-compassion factor; Neg SC Factor = negative self-compassion factor; FSC = Fear of Self-Compassion subscale; BAS-2 = Body Appreciation Scale-2; SATAQ-4 = Sociocultural Attitudes Towards Appearance Questionnaire 4: Internalization – Thin/Low Body Fat subscale; CSW-A = Contingencies of Self-Worth Scale – Appearance Subscale; UPACS = Upward Appearance Comparison Scale; BSQ-R-10 = Body Shape Questionnaire-Revised.

* $p < 0.05$; ** $p < 0.01$ (2-tailed)

Table 4

Adjusted (Non-Centered) Means and Standard Errors for Outcomes by Condition at Post-Intervention Analyzed with ANCOVAs

Condition	*M*	*SE*	*F*	*p*	η_p^2
Appearance-Contingent Self-Worth			**5.77**	**.004**	**.073**
SC group	5.23	0.11			
DB group	5.12	0.12			
WL group	5.63	0.11			
Body Appreciation			**5.58**	**.005**	**.071**
SC group	3.35	0.06			
DB group	3.32	0.05			
WL group	3.11	0.05			
Upward Appearance Comparison			3.60	.03	.047
SC group	3.84	0.08			
DB group	3.65	0.08			
WL group	3.95	0.08			

Note. SC = self-compassion; DB = dissonance-based; WL = waitlist. Significant effects ($p < .01$) are shown in bold.

Table 5

Condition Differences at Post-Intervention After Adjustment for Pre-Intervention Scores

Comparison	Outcome Measure	
	Appearance-Contingent Self-Worth	Body Appreciation
SC versus DB	0.13 (.91)	0.10 (.94)
SC versus WL	**-0.53 (.031)**	**0.63 (.007)**
DB versus WL	**-0.65 (.005)**	**0.52 (.030)**

Note. Data represent effect sizes (*d*), with *p* values in parentheses. For each comparison, the first group is the reference group. Significant effects are shown in bold.

Table 6

Pearson Correlations within the SC Group Between Pre-Post Change in Self-Compassion Factor Scores and Body Image Variables

Outcome	Negative SC Factor Change	Positive SC Factor Change
BSQ-R-10 Change	.27	-.38**
CSW-A Change	.22	.13
BAS-2 Change	-.38**	.31**
UPACS Change	-.38**	-.40**
SATAQ-4 Change	.10	-.08

Note. n = 50. SCS = Self-Compassion Scale total score; BSQ-R-10 = Body Shape Questionnaire-Revised-10; CSW-A = Contingencies of Self-Worth Scale – Appearance Subscale; BAS-2 = Body Appreciation Scale-2; UPACS = Upward Appearance Comparison Scale; SATAQ-4 = Sociocultural Attitudes Towards Appearance Questionnaire-4: Internalization - Thin/Low Body Fat subscale.
* $p < 0.05$; ** $p < 0.01$ (2-tailed)

Table 7

Pearson Correlations within the DB Group between Pre-Post Change in Thin-Ideal Internalization (and Self-Compassion, tested post-hoc) and Body Image Variables

Outcome	SATAQ-4 Change	SCS Change (post hoc)
SATAQ-4 Change	-	-.31*
BSQ-10-R Change	.25	-.29*
CSW-A Change	-.18	-.16
BAS-2 Change	-.05	.42**
UPACS Change	.10	-.35*

Note. $n = 50$. SATAQ-4 = Sociocultural Attitudes Towards Appearance Questionnaire-4: Internalization - Thin/Low Body Fat Subscale; SCS = Self-Compassion Scale total score; BSQ-R-10 = Body Shape Questionnaire-Revised; CSW-A = Contingencies of Self-Worth Scale – Appearance Subscale; BAS-2 = Body Appreciation Scale-2; UPACS = Upward Appearance Comparison Scale.

* $p < 0.05$; ** $p < 0.01$ (2-tailed)

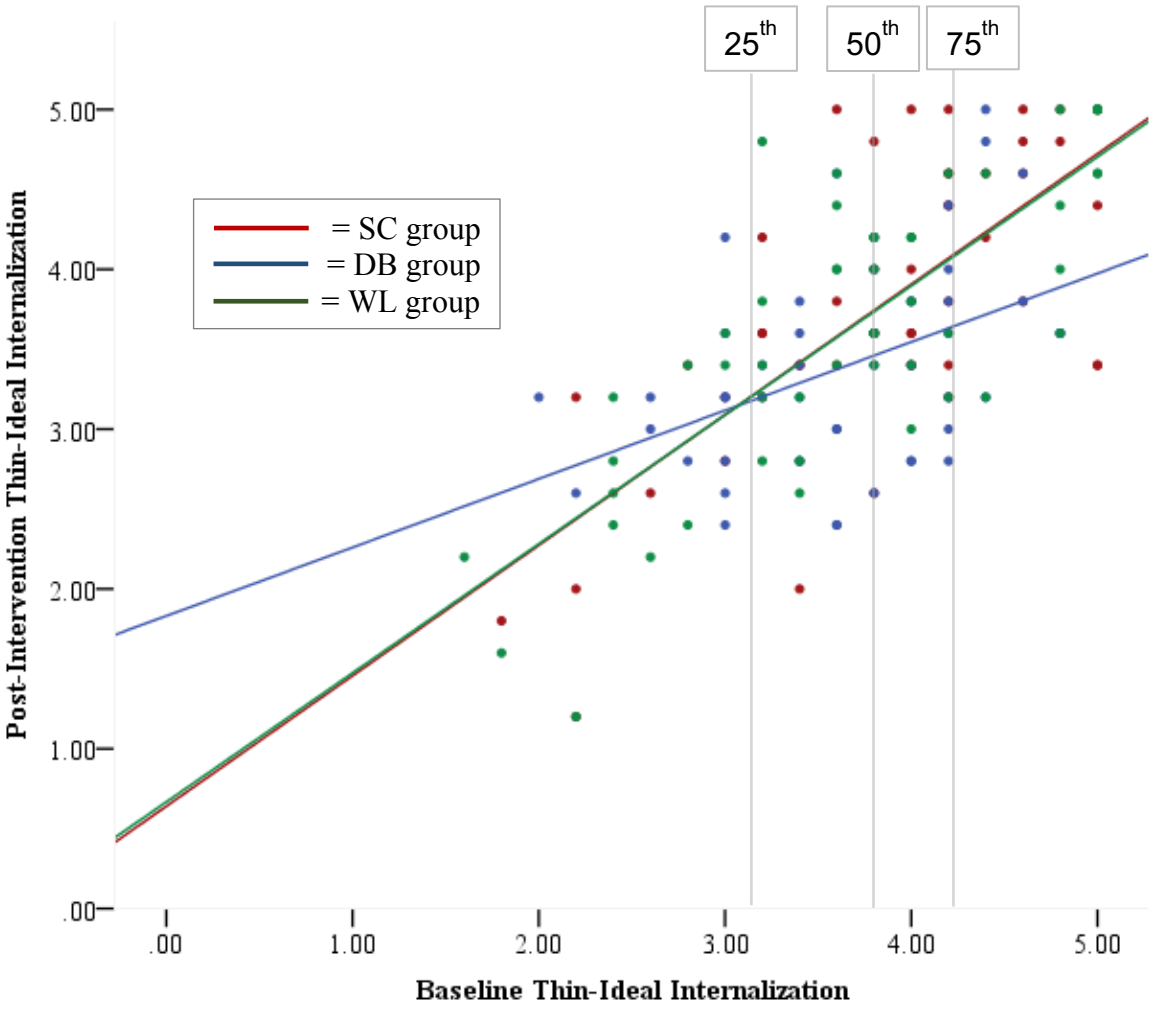

Figure 1. Line graph depicting the heterogeneous slopes for the three groups on thin-ideal internalization (SATAQ-4 Internalization: Thin/Low Body Fat subscale scores). Gray lines represent the 25th, 50th, and 75th percentiles of baseline thin-ideal internalization.

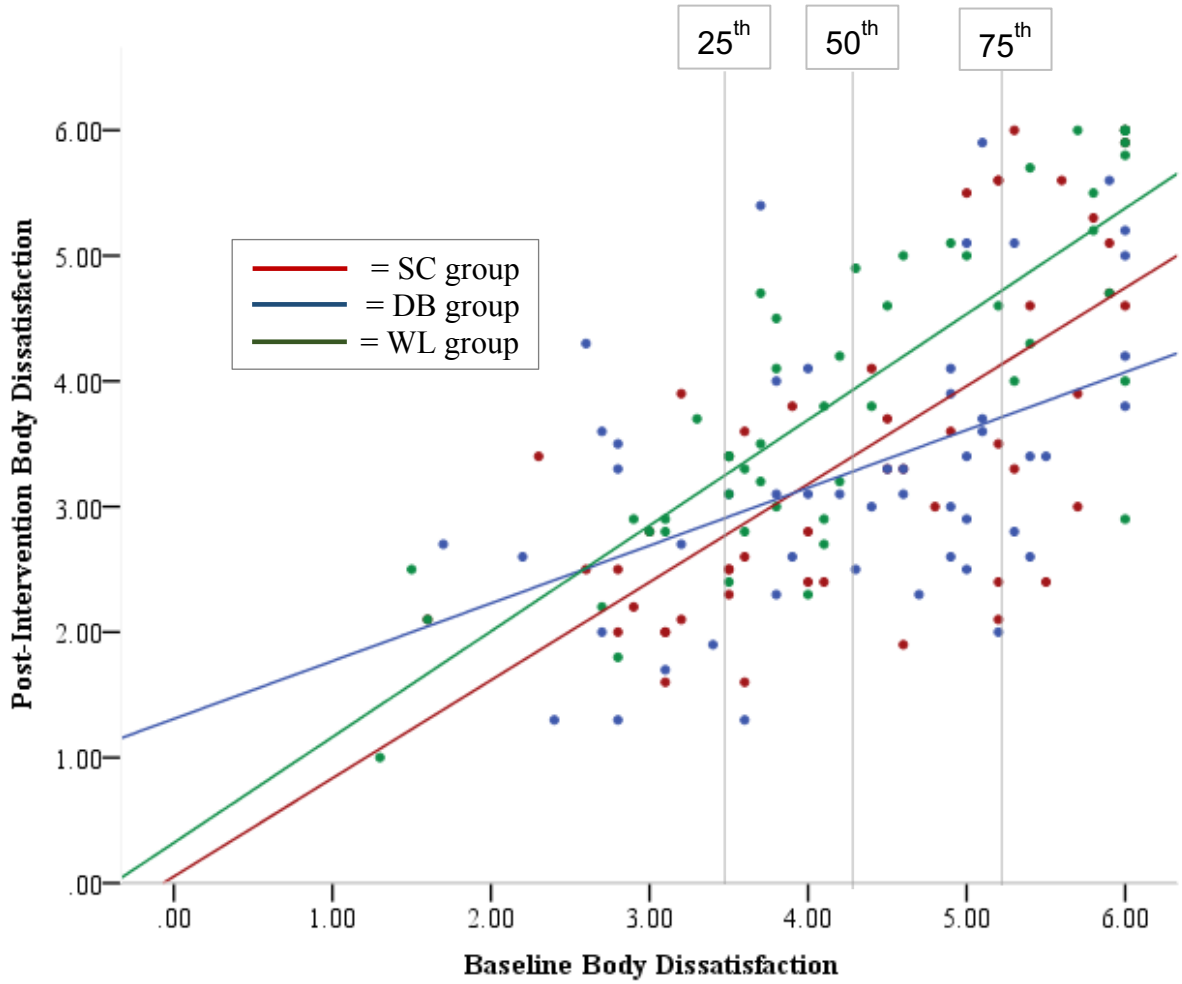

Figure 2. Line graph depicting the heterogeneous slopes for the three groups on body dissatisfaction (BSQ-R-10 scores). Gray lines represent the 25th, 50th, and 75th percentiles of baseline body dissatisfaction.