

# A Randomized Controlled Trial of Brief Interventions for Body Dissatisfaction

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The authors examined the relative effectiveness of 3 different approaches to the experience of body dissatisfaction compared to a control and ruminative attention control condition, with respect to increasing weight and appearance satisfaction. One hundred female undergraduates (mean age = 24.38,  $SD = 9.39$ ) underwent a body dissatisfaction induction procedure, which significantly decreased levels of weight and appearance satisfaction. Participants were then randomized, 20 to each of 5 groups: control, ruminative attention control acceptance, distraction, and cognitive dissonance. With the exception of the control group, participants were briefly trained in their assigned technique and were asked to practice this over the next 5 min while repeated measures of weight and appearance satisfaction were recorded. Acceptance, cognitive dissonance, and distraction were superior to both control conditions in increasing weight satisfaction and were superior to a control condition in improving appearance satisfaction. Only acceptance was superior in improving appearance satisfaction compared to a ruminative attention control. The evidence suggests that acceptance is a promising approach to investigate further with respect to its efficacy for reducing body dissatisfaction.

*Keywords:* body dissatisfaction, acceptance, cognitive dissonance, ruminative attention control, distraction

*Body dissatisfaction*, defined as a discrepancy between the perceived and the desired or ideal body weight and shape that can lead to cognitive, affective, behavioral, and/or perceptual disturbances, is highly prevalent in adult women and young people. Adult Caucasian women have consistently been found to be significantly more dissatisfied with their body than men over their lifespan (Bulik et al., 2001). In a sample of almost 5,000 7th- to 12th-grade students in the United States, 27.3% were classified as having body dissatisfaction (Crow, Eisenberg, Story, & Neumark-Sztainer, 2008b). Body image was the greatest worry for both males and females aged 11–24 years (32.3%), followed by family conflict (29.3%) and coping with stress (26.9%) in a national survey of 29,000 young Australian people (Mission Australia, 2007). Endorsement of body image as a major worry had doubled in the 20- to 24-year age group from the survey conducted in the previous year (Mission Australia, 2006).

Longitudinal researchers have identified body dissatisfaction as one of the risk factors associated with the development of both negative affect and eating disorders (Jacobi et al., 2004; McKnight, 2003; Stice, 2002). A prospective test of the dual-pathway model of bulimic pathology (Stice, 2001) suggests that pressures to be thin (from the media, parents, and peers) and internalization of the thin ideal lead to body dissatisfaction that in turn leads to dieting and negative affect that then increases risk for bulimic symptoms. Other longitudinal researchers have also implicated body dissatisfaction in negative affect, where higher levels of body dissatisfac-

tion predicted suicide attempts in adolescents over a 2-year follow-up (Rodriguez-Cano, Beato-Fernandez, & Llarío, 2006). However, researchers of a recent 5-year follow-up of 2,516 young adolescents found that extreme and unhealthy weight control behaviors rather than body dissatisfaction predicted suicidal ideation and attempts in young women (Crow, Eisenberg, Story, & Neumark-Sztainer, 2008a).

Body dissatisfaction is a robust risk factor for the development of disordered eating in a variety of longitudinal studies. In studies of adolescent girls, initial negative body image predicted later eating problems (Attie & Brooks-Gunn, 1989), and researchers found body dissatisfaction to significantly differentiate between those who remained asymptomatic and those who developed sub-clinical forms of eating disorders (Killen et al., 1994, 1996). In an 8-year prospective study spanning the transition from adolescence to young adulthood, researchers found poor body image predicted the development of eating problems (Graber, Brooks-Gunn, Paikoff, & Warren, 1994). More recently, researchers have indicated that increased body concern was a prospective risk factor for eating disorders for young adult women (Ghaderi & Scott, 2001). In addition, body dissatisfaction predicted an increase in bulimic symptoms for adolescent girls across a 1-year period even when researchers controlled for the effects of dieting and restraint (Johnson & Wardle, 2005). While body dissatisfaction improves with age, it remains a problem for a substantial minority of adult women (Heatherton, Mahamedi, Striipe, Field, & Keel, 1997). Women who are most dissatisfied with their bodies in their early 20s are likely to continue dieting and engaging in disordered eating practices over their adult life (Heatherton et al., 1997).

Thus, improving body satisfaction in women and young people can be considered an important goal that may lead to amelioration or prevention of significant clinical psychopathology. Develop-

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ment of specific interventions for body disturbance has also been identified as having the potential to enhance evidence-based treatments for eating disorders (Farrell, Shafran, & Lee, 2006). While omnibus therapeutic programs for body image disturbance have been developed using cognitive behavior techniques including monitoring, relaxation training, cognitive challenging and restructuring, decreasing avoidant and compulsive behaviors, introducing activities related to mastery and pleasure, problem solving, assertion training, and mirror exposure (Butters & Cash, 1987; Rosen, Saltzberg, & Srebnik, 1989), it has been suggested in a recent review of such programs that findings for the efficacy of these interventions are mixed and that many of the observed effects may be nonspecific (Farrell et al., 2006).

However, in their review of eating disorder prevention programs, Stice, Shaw, Burton, and Wade (2006) suggested that the evidence is clearer for focused interventions and that the most efficacious with respect to decreasing body dissatisfaction include content related to cognitive dissonance and healthy weight. This conclusion was based on the significant intervention effects obtained for these interventions across multiple trials conducted by independent laboratories, typically with high-risk groups who present with body image concerns. Cognitive dissonance programs consist of counterattitudinal activities such as listing positive physical features about the self, writing down the costs and consequences of pursuing the thin ideal, and examining the negative impact on thin-ideal messages portrayed by family, friends, and the media (Stice et al., 2006). Such programs have been found to be superior in reducing body dissatisfaction when compared to expressive writing exercises about relationships or goals (Stice et al., 2006), media advocacy (Becker, Smith, & Ciao, 2006), and yoga (Mitchell, Mazzeo, Rausch, & Cooke, 2007). While cognitive dissonance approaches have also been found to be more effective than healthy weight interventions (Stice, Chase, Stormer, & Appel, 2001), a subsequent examination showed that both approaches were significantly more effective than therapeutic writing or assessment-only conditions (Stice et al., 2006).

It has been suggested that additional effort be devoted to designing interventions that affect multiple health outcomes (Stice et al., 2006). One such intervention that may be of value with respect to that goal would be a mindfulness approach that involves acceptance of the thoughts, feelings, and perceptions related to the construction and maintenance of body dissatisfaction. This is an area that has received much attention in recent years regarding treatment interventions for a variety of disorders and has found to be efficacious with respect to chronic health problems and chronic depression (Baer, 2003). To date, it has been suggested that mindfulness approaches may be useful in reducing the symptoms of a binge eating disorder (Kristeller & Hallett, 1999; Telch, Agras, & Linehan, 2001), but as yet acceptance has not been rigorously tested with body dissatisfaction or disordered eating.

Another approach that may be effective in improving body satisfaction and other related variables is distraction, an approach implied across the variety of techniques used in omnibus programs for body image disturbance. *Distraction*, defined as the purposeful act of shifting attention away from distressing symptoms toward more pleasant or neutral thoughts or activities (Nolen-Hoeksema & Morrow, 1991), has been found to be commensurate with the effects of acceptance with respect to the reduction of the intensity

of negative mood (Huffziger & Kuehner, 2009; Singer & Dobson, 2007) and reduction of food cravings (Forman et al., 2007).

Our main aim of the current study was to examine three specific approaches to improving body satisfaction in order to identify those that look most promising for further development, namely cognitive dissonance, acceptance, and distraction. While cognitive dissonance has been established as an effective intervention for reducing body dissatisfaction, little is known about the efficacy of distraction and acceptance as intervention approaches for reducing body dissatisfaction. Therefore, in the current study, we examined the efficacy of these three intervention approaches in improving weight and appearance satisfaction and distress versus controls, following a body dissatisfaction induction procedure. Two control groups were included: one group received no additional training, while the other was an attention control group who were asked to focus on the thin-ideal images presented in the body dissatisfaction induction procedure. We modeled this latter control group to approximate a ruminative response style, which is a response strategy common to people experiencing disordered eating (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007) and hence techniques to decrease body checking have been included in the most recent version of cognitive behavior therapy for bulimia nervosa (Fairburn, Cooper, Shafran, & Wilson, 2008). This condition was labeled *ruminative attention control*. To date, rumination has not been examined with respect to body satisfaction. Investigations of ruminative response styles in response to induced depressed mood in depressed outpatients suggest that rumination is associated with significantly worse mood than either acceptance or distraction but not significantly worse than control conditions (Singer & Dobson, 2007).

There were two specific objectives of the current study, conducted with female university students. The first was to compare cognitive dissonance, acceptance, distraction, ruminative attention control, and control conditions with respect to increasing weight and appearance satisfaction, previously defined as components of body satisfaction (Heinberg & Thompson, 1995). We hypothesized that the dissonance, acceptance, and distraction approaches would be significantly more effective than the either of the control conditions in improving both weight and appearance satisfaction. Given previous findings in the depression literature (Singer & Dobson, 2007), we did not hypothesize any differences between the control conditions. The second objective was to compare these groups with respect to a further outcome variable, distress about body feelings, where it was hypothesized that the acceptance condition would significantly decrease distress compared to distraction, based on the findings of Singer and Dobson (2007) showing that acceptance rather than distraction reduced negative attitudes toward negative mood experiences in depressed outpatients.

## Method

### *Participants*

One hundred female 1st-year Caucasian psychology undergraduate students were recruited from Flinders University over July 2008 to September 2008, as part of the volunteer research pool where research time earned credit points. The only inclusion criterion was that participants had to be female. This study received approval from both the Flinders Social and Behavioral Research Ethics Committee and the Flinders Clinical Research Ethics Committee, and we received signed

consent from each participant. Given the lack of any similar investigations in the body dissatisfaction literature, we examined the desired sample size using the effect size associated with the main effect of time from an intervention conducted outside of the laboratory (Stice et al., 2006), where a three-session cognitive dissonance intervention was superior to an assessment-only condition with respect to body dissatisfaction ( $r = .35$ ) at posttest. Within that design, we obtained an acceptable power of 0.80 with an alpha of .05 with 37 people in each of the five groups over six assessment points (Hedeker, Gibbons, & Waternaux, 1999). Therefore, with 20 people in each group, we figured we may be slightly underpowered to detect medium effect sizes, but researchers using similar laboratory designs examining depressed mood (e.g., Singer & Dobson, 2007) have obtained very large effect sizes ( $d = 1.73$ ) with 25 people in each group.

### Descriptive Baseline Measures

At baseline participants completed a self-report questionnaire comprising demographic questions (age, date of birth, height, and weight). Only 1 person, who was subsequently randomized to the acceptance group, did not report her weight. In addition, we administered the nine-item dispositional Body Dissatisfaction scale from the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983). Participants are asked to indicate how often the statement is true of them on a 6-point scale ranging from 1 (never) to 6 (*always*). The original scoring for eating disorder populations (0, 0, 0, 1, 2, 3) was not used as this would have produced limited descriptive information. Instead we used the full 6-point Likert scale where a 6 indicated always experiencing dissatisfaction with various body parts and a 1 indicated never experiencing such dissatisfaction. The mean item score was used, and higher scores reflected greater dissatisfaction and there were no missing values. The internal consistency of this subscale in the current study was .83.

### Procedure

The procedure is depicted in Figure 1. The procedure was based on that previously described by Singer and Dobson (2007) with depressed mood. Individual participants attended a laboratory containing a single computer. Before commencing, participants were informed they would view a set of clothing advertisements and receive a training technique for responding to media images. Participants completed the set of standardized questionnaires and then completed three online visual analog scales (VASs). Based on Heinberg and Thompson (1995), we required participants to indicate their response to the questions “How satisfied do you feel about your weight right now?” “How satisfied do you feel about your appearance right now?” and “How distressed are you by your feelings about your body right now?” by dragging a slider along a 500-pixel horizontal line representing a scale from *not at all* to *very much*, where responses were rated 0 (*extreme dissatisfaction*) to 500 (*extreme satisfaction*). VASs have shown to be valid and reliable indicators of change in body satisfaction, are quick and easy to administer, and are accurate in representing small changes (Heinberg & Thompson, 1995; Tiggemann & McGill, 2004). If the slider was left untouched, error checks were put in place that asked the participant to “please click OK if you are happy with your responses, or click cancel to return and make changes.” Hence there was no missing data for any of the dependent variables.

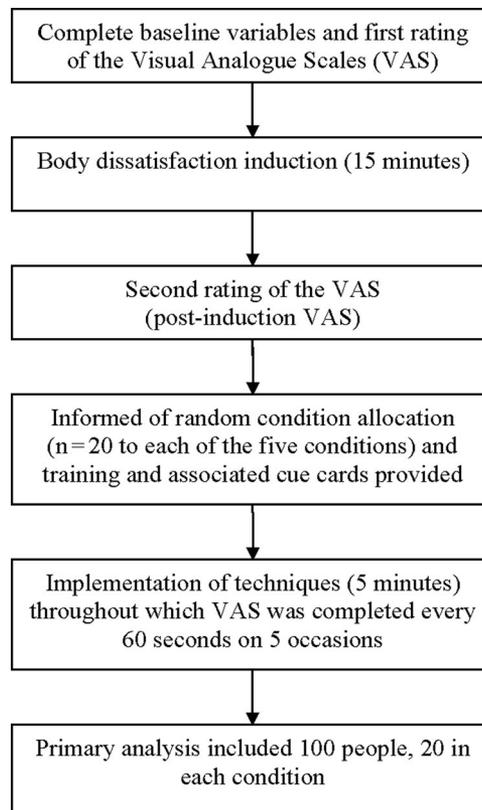


Figure 1. Design of the study.

After the participant had made a rating on the VAS at baseline, we used a body dissatisfaction induction procedure in order to create bigger effect sizes for any subsequent changes. A set of 16 magazine advertisements of clothing modeled by young, thin women was displayed on the computer screen, a procedure that has been found to reliably produce significant main effects on decreases of body satisfaction (Groesz, Levine, & Murnen, 2002). Participants were instructed that they had 15 min with which to view and rate the set of images. In order to heighten the impact of the induction (Tiggemann & McGill, 2004), we encouraged participants to compare themselves with the models by completing the adapted Consumer Response Questionnaire (Mills, Polivy, Herman, & Tiggemann, 2002) after viewing each image, which requires the participant to indicate her agreement, on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with three statements: (a) “I would like my body to look like this woman’s body”; (b) “This woman is thinner than me”; (c) “In a busy clothes shop, I would not like to try on bathing suits in the same room if this woman was also trying on bathing suits in the same change room.”

After the induction, a second set of ratings on the VAS was completed. Randomization was conducted in the week prior to data collection such that participants had an equal probability of assignment to one of the five interventions using block randomization, a computer-generated random number sequence that takes into account the distribution of previous allocations so that groups will be approximately the same size. Melissa Atkinson and Wing Man George were responsible for generating the randomization

sequence. Participants were not informed of group membership until after the second occasion of VAS ratings: Blinding to group assignment was not possible within this design. Melissa Atkinson or Wing Man George then verbally communicated to the participants the training for each condition by reading through an instruction card that was also given to the participant. Participants allocated to the fifth condition, a no-instruction control group, received no card. After the card had been read, Melissa Atkinson and Wing Man George answered any questions and ensured that participants understood the instructions. No examples were provided. Participants retained the instruction card and were then asked to practice the described techniques for a period of 5 min, throughout which they completed the VAS on five further occasions, each occasion taking about 10 s to complete and signaled by a noise from the computer at 60-s intervals. Debriefing was provided at the end of the session, and descriptions of the other conditions were provided to each participant.

### Techniques

*Cognitive dissonance.* The written instruction sheet for this condition included a summary of some of the helpful techniques identified previously (Stice et al., 2006) and read as follows:

For the next 5 minutes, brainstorm about the following: the costs and consequences of pursuing the thin ideal, and positive attributes about yourself (these can be physical, emotional, or behavioral). Write down as many costs and consequences of pursuing the thin ideal as you can, and detail positive attributes about yourself. Try not to stop writing until the 5 minutes is up. If you have finished before 5 minutes is up, just rephrase or rewrite what's already written.

*Acceptance.* The instructions for the next three conditions were adapted from Singer and Dobson (2007). In the acceptance condition, participants were instructed that

The technique of acceptance is about experiencing without judgment. When practicing this technique, you are encouraged to simply observe your current thoughts and feelings by bringing them to your awareness and holding them there. One way to relate to unpleasant experiences is to register that they are there, to allow them to be as they are in that moment and simply hold them in awareness. When practicing this technique it is often helpful to close your eyes, if that feels comfortable for you. The first step is being aware, really aware, of what is going on with you right now. Accepting experience means registering the thoughts that are there, to allow them to be there, in that moment and simply hold them in awareness. Think of thoughts as if they were projected on the screen at the cinema. You sit, watching the screen, waiting for the thoughts or images to arise. When it does you pay attention to it so long as it is there "on the screen" and then let it go as it passes away. So rather than try to push the thoughts away or shut them out, just acknowledge them, perhaps saying "Ah, there you are, that's how it is right now." And similarly with sensations in the body: If there are sensations of tension, of holding or whatever, then encourage awareness of them, simply noting them, "OK, that is how it is right now." (p. 567)

*Distraction.* Those being trained in distraction were instructed that

The technique of distraction is based on focusing attention away from the body and related thoughts and feelings. Distraction means purposefully turning your attention away from the symptoms of body

evaluation. You can do this by focusing instead on more pleasant or neutral thoughts or actions, or simply anything that draws your attention away from your feeling about yourself. For instance, this might include thinking about a place that you often visit or thinking about the shape of an object. When practicing this technique, suggested exercises are to "walk the entire length of a shopping mall, visualizing the stores that you will pass on this walk," "think about the way your favorite beach looks at sunset," "think about all the parts that make up an automobile," and "think about all the steps involved in getting from your home to where you are today." (p. 567)

*Ruminative attention control.* Instructions for the rumination technique included the following:

For the next five minutes, write down the following: as many features and aspects of the images that were presented to you as you can remember; how the images make you feel; think about possible consequences of how you feel and why you react the way you do. (p. 567)

There were no instructions provided about the use or otherwise of active problem solving.

*Control.* Those allocated to the control condition received no training and were simply instructed to wait for the signal designating the next phase of the study.

### Statistical Analyses

We performed a manipulation check using a 5 (training condition)  $\times$  2 (time) repeated measures analysis of variance, where the two time points included the baseline and postinduction VAS, and the dependent variable was weight satisfaction, appearance satisfaction, and distress about body feelings, respectively. In order to examine the comparative effectiveness of the different conditions for changing the outcome variables, we conducted analyses using generalized linear modeling. We conducted repeated measures analyses of covariances (ANCOVAs) to examine the presence of interactions using a 5 (condition: cognitive dissonance, acceptance, distraction, a control condition, ruminative attention control)  $\times$  6 (time: postinduction VAS through to the final VAS) design, controlling for body mass index (BMI). For the purpose of using BMI as a covariate, we substituted the mean BMI value for the one missing case. After ascertaining that change over time was linear, we conducted a 5 (condition)  $\times$  2 (time) ANCOVA, where the two time points included the postinduction and final VAS rating, in order to simplify the interpretation of the post hoc analyses. These latter analyses were conducted in two ways. First, we examined within-group effect sizes using ANCOVAs (where BMI was included as the covariate). Second, we examined between-groups effect sizes using a repeated measures ANCOVAs utilizing a 2 (the two conditions being compared)  $\times$  2 (time) design. Indicators of clinical significance (Kraemer et al., 2003) were based on within-group effect sizes (Cohen's *d*) of at least 0.80 as well as the numbers of participants judged to be "very improved," defined for this purpose as the final VAS score being at least one standard deviation of the baseline mean greater than the postinduction VAS. We used estimations of likelihood ratios derived from chi-square analyses where each group was compared to the control group. Further, people were judged to have stayed the same if the difference score was between zero and the one standard deviation value, and to have deteriorated if this difference score was less than zero.

Results

Descriptives

Participants were between 18 and 57 years of age ( $M = 24.38$ ,  $SD = 9.39$ ), with a median age of 19.8 years, where 25% of the sample was aged over 25 years. The women had a self-reported BMI ranging between 16.22 and 42.98 ( $M = 23.46$ ,  $SD = 4.82$ ). The mean item score on the dispositional Body Dissatisfaction scale was 3.53 ( $SD = 0.88$ ), indicating that a response was between *sometimes* and *often* with respect to experiencing body dissatisfaction. Only 6 people (6%) experienced a rating of 5 or above, indicating that they usually experienced body dissatisfaction, which is likely to indicate clinical severity.

Manipulation Check

As shown in Table 1, participants assigned to the five conditions did not differ on any of the baseline variables, including the dependent variables. We conducted a manipulation check of the body dissatisfaction induction by examining the changes in the three dependent variables pre- and postinduction using a 5 (training condition)  $\times$  2 (time) repeated measures analysis of variance. Across all groups, the induction successfully resulted in decreasing weight satisfaction, associated with a significant main effect of time,  $F(1, 95) = 4.49$ ,  $p = .04$ , and decreasing appearance satisfaction, which was also associated with a significant main effect of time,  $F(1, 95) = 11.46$ ,  $p = .001$ . There was no accompanying significant increase in distress,  $F(1, 95) = 0.02$ ,  $p = .88$ . There were no significant main effects of group or interactions between time and group for any of the three dependent variables. After the induction procedure, the three variables were not significantly different across the five groups (weight satisfaction,  $F[4] = 0.06$ ,  $p = .99$ ; appearance satisfaction,  $F[4] = 0.79$ ,  $p = .54$ ; distress,  $F[4] = 0.13$ ,  $p = .97$ ).

Significance and Linearity of Change Over Time Among the Five Conditions

In order to examine the trajectory of change over the 5-min period postinduction and to investigate whether there were any differences among the groups with respect to the profiles and trends of the body dissatisfaction ratings over this time, we conducted a 5 (training condition)  $\times$  6 (time) repeated measures ANCOVA, controlling for BMI, as reported in Table 2. For weight satisfaction, there was no significant main effect of time,  $F(5,$

$90) = 1.08$ ,  $p = .38$ , or condition,  $F(4, 94) = 1.84$ ,  $p = .07$ , but there was a significant interaction between time and condition. Further testing of the interaction for weight satisfaction showed that both the linear,  $F(4, 94) = 7.03$ ,  $p < .001$ , and quadratic,  $F(4, 94) = 6.40$ ,  $p < .001$ , trend were significant. Similarly for appearance satisfaction, there was no main effect of time,  $F(5, 90) = 0.47$ ,  $p = .80$ , or condition,  $F(4, 94) = 2.06$ ,  $p = .09$ , but there was a significant interaction. The linear,  $F(4, 94) = 5.26$ ,  $p = .001$ , and quadratic,  $F(4, 93) = 3.39$ ,  $p = .01$ , trend for the appearance satisfaction interaction were both significant. As a linear trend was suggested in the trajectory of change for both these dependent variables (i.e., improved satisfaction with weight and body), we examined only the first and last observation points postinduction in further analyses in order to promote clearer interpretation with respect to the post hoc comparisons.

In contrast, for distress about feelings about the body, there was no significant interaction between time and condition,  $F(20, 372) = 1.10$ ,  $p = .34$ . Neither was there a significant main effect of time,  $F(4, 90) = 0.13$ ,  $p = .99$ , or condition,  $F(4, 94) = 1.53$ ,  $p = .06$ . Given the lack of a significant interaction for this variable, it was not examined in further analyses.

Post Hoc Testing of Changes in Weight Satisfaction Among the Five Conditions

We used a 5 (training condition)  $\times$  2 (time) repeated measures ANCOVA to compare changes in weight satisfaction between the postinduction and final VAS ratings across the five groups (see Table 3). There was no significant main effect of time,  $F(1, 94) = 1.15$ ,  $p = .29$ , or condition,  $F(4, 94) = 0.97$ ,  $p = .43$ . There was a significant interaction between time and condition,  $F(4, 94) = 7.62$ ,  $p < .001$ . Post hoc contrasts, corrected for multiple testing (see Table 4), indicated significant improvements in weight satisfaction between postinduction and final VAS ratings for the acceptance, distraction, and cognitive dissonance conditions. These changes were significantly greater in the cognitive dissonance, acceptance, and distraction groups compared to the two control conditions. There were no other significant differences between the groups.

Post Hoc Testing of Changes in Appearance Satisfaction Among the Five Conditions

As shown in Table 3, a 5 (training condition)  $\times$  2 (time) repeated measures ANCOVA for appearance satisfaction showed

Table 1  
Baseline Demographic, Body Dissatisfaction, and Dependent Variables

Variable	Acceptance		Distraction		Cognitive dissonance		Ruminative attention control		Control		F(4)	p
	M	SD	M	SD	M	SD	M	SD	M	SD		
Age	26.55	12.53	24.16	7.32	23.52	9.39	25.96	10.97	21.68	4.94	0.86	.49
Body mass index	22.48	4.07	23.63	5.89	24.32	4.26	22.70	5.31	24.13	4.50	0.58	.68
Body dissatisfaction	3.43	0.25	3.61	0.29	3.58	0.21	3.54	0.34	3.52	0.24	1.30	.28
Weight satisfaction	200.10	160.56	210.65	151.76	201.15	169.83	176.45	124.43	179.50	151.00	0.19	.94
Appearance satisfaction	176.90	117.65	249.10	141.28	218.00	147.54	194.25	120.00	193.30	111.85	0.95	.43
Distress about body feelings	192.55	141.85	231.55	161.57	201.45	169.02	164.45	145.79	177.00	135.75	0.57	.68

Table 2

*Descriptive Statistics for the Dependent Measures by Condition (N = 20 in Each) Across the Six Assessments Postbody Dissatisfaction Induction Controlling for Body Mass Index*

Outcome measure	Acceptance		Distraction		Cognitive dissonance		Ruminative attention control		Control	
	M	SD	M	SD	M	SD	M	SD	M	SD
Weight satisfaction <sup>a</sup>										
Postinduction	163.85	136.20	179.65	165.45	171.10	158.47	174.80	134.81	185.35	153.47
Second assessment	208.95	132.58	248.00	150.01	188.30	151.41	158.00	130.13	178.70	156.57
Third assessment	213.70	134.58	267.20	134.28	206.55	164.79	160.65	131.40	177.25	141.76
Fourth assessment	229.55	144.54	286.75	130.87	209.85	156.73	164.45	141.17	171.80	139.31
Fifth assessment	238.90	148.85	297.45	131.82	237.00	155.86	167.40	149.53	175.65	149.02
Final assessment	247.95	149.37	291.35	141.76	247.65	152.19	177.35	149.20	165.05	142.83
Appearance satisfaction <sup>b</sup>										
Postinduction	138.35	120.95	214.55	165.80	185.10	164.50	179.35	131.41	160.85	125.74
Second assessment	194.35	110.37	267.55	140.67	208.65	159.20	176.70	128.36	180.10	119.55
Third assessment	201.15	107.83	263.30	143.29	219.65	161.18	167.35	129.75	184.60	121.09
Fourth assessment	224.05	115.68	292.05	134.30	229.40	159.03	165.30	143.37	189.40	134.27
Fifth assessment	237.45	121.64	296.15	140.63	253.90	152.39	175.90	141.54	200.35	134.10
Final assessment	243.00	119.78	307.10	140.96	270.65	144.46	182.80	148.26	192.15	138.86
Distress about feelings										
Postinduction	207.75	139.42	177.65	162.94	182.00	168.93	192.25	155.43	199.20	133.67
Second assessment	151.35	112.80	101.60	126.45	166.60	152.26	195.10	150.89	196.75	142.50
Third assessment	123.10	118.90	107.80	121.72	148.50	151.45	199.45	150.41	195.55	147.30
Fourth assessment	132.40	128.25	80.35	116.63	170.80	168.72	200.40	164.78	178.75	156.19
Fifth assessment	118.76	133.81	77.55	111.36	155.95	157.65	188.50	171.15	180.20	156.87
Final assessment	108.20	133.64	68.05	113.95	150.95	161.84	176.35	157.92	173.40	153.94

<sup>a</sup> Time × Condition interaction,  $F(20, 372) = 2.35, p = .001 (\eta_p^2 = .11)$ .

<sup>b</sup> Time × Condition interaction,  $F(20, 372) = 1.81, p = .02 (\eta_p^2 = .09)$ .

there was no significant main effect of time,  $F(1, 94) = 0.02, p = .89$ , or condition,  $F(4, 94) = 1.74, p = .15$ . There was a significant interaction between time and condition,  $F(4, 94) = 5.93, p < .001$ . Post hoc contrasts (see Table 4) showed that the improvements between the postinduction and final VAS were significantly greater for the acceptance compared to the control condition, whereas the cognitive dissonance, acceptance, and distraction groups all significantly improved compared to the ruminative attention control condition.

### Clinical Significance

Our first indicator of changes in variables that have the potential to translate to actual clinical change was the within-group effect sizes (see Table 3), which showed that acceptance and distraction

were associated with large effect size changes in weight satisfaction. None of the approaches achieved large effect sizes for appearance satisfaction. The second indicator of clinical significance, shown in Table 5, suggests that cognitive dissonance, distraction, and acceptance resulted in significantly more participants being greatly improved with respect to weight satisfaction than the control group, with 30%, 25%, and 20% meeting criteria, respectively, in each group. Only cognitive dissonance and acceptance showed significantly more participants being greatly improved than the control group for appearance satisfaction, with 40% and 45% meeting criteria in the respective groups. Deterioration was most common in both the control groups, where 40% to 50% of the participants experienced deterioration with respect to weight and appearance satisfaction.

Table 3

*Dependent Variables Postinduction to Final Visual Analog Scale: Within-Group Contrasts and Effect Sizes*

Condition	Weight satisfaction			Appearance satisfaction		
	F(1, 18)	p	d	F(1, 18)	p	d
Acceptance	7.89	.01	1.32	2.66	.12	0.77
Distraction	5.21	.04	1.08	1.60	.22	0.60
Cognitive dissonance	0.55	.47	0.35	0.35	.56	0.28
Ruminative attention control	0.01	.94	0.05	<0.001	.99	0.01
Control	1.30	.27	0.54	0.04	.85	0.09

Note. d = within-group effect size (Cohen's d),  $(2\sqrt{F})/(\sqrt{df \text{ error}})$ , where 0.3 is small, 0.5 is medium, and  $\geq 0.8$  is large.

Table 4  
*Repeated Measures ANCOVA: Between-Groups Contrasts and Effect Sizes of Postinduction to Final Visual Analog Scale (VAS)*

Condition	Acceptance			Control			Ruminative attention control			Cognitive dissonance		
	<i>F</i>	<i>p</i>	<i>d</i>	<i>F</i>	<i>p</i>	<i>d</i>	<i>F</i>	<i>p</i>	<i>d</i>	<i>F</i>	<i>p</i>	<i>d</i>
Weight satisfaction												
Distraction	0.28	.60	0.29	<b>17.15</b>	<b>&lt;.001</b>	<b>0.83</b>	<b>10.25</b>	<b>.003</b>	<b>0.75</b>	1.39	.25	0.29
Cognitive dissonance	0.001	.97	0.002	<b>11.84</b>	<b>.001</b>	<b>0.54</b>	<b>9.50</b>	<b>.004</b>	<b>0.46</b>			
Ruminative attention control	<b>17.55</b>	<b>&lt;.001</b>	<b>0.48</b>	1.31	.26	0.08						
Control	<b>16.58</b>	<b>&lt;.001</b>	<b>0.56</b>									
Appearance satisfaction												
Distraction	0.20	.66	0.45	6.17	.02	0.80	<b>9.52</b>	<b>.004</b>	<b>0.86</b>	0.15	.70	0.25
Cognitive dissonance	0.50	.49	0.20	4.82	.04	0.55	<b>9.54</b>	<b>.004</b>	<b>0.61</b>			
Ruminative attention control	<b>18.84</b>	<b>&lt;.001</b>	<b>0.43</b>	1.38	.25	0.07						
Control	<b>10.67</b>	<b>.002</b>	<b>0.36</b>									

Note. As there were 10 between-groups comparisons for each variable, only  $p \leq .005$  was considered to be significant (shown in boldface).  $d$  = between-groups effect size (Cohen's  $d$ ), (final VAS Group 1 – final VAS Group 2)/pooled  $SD$  at baseline of the whole sample, where 0.3 is small, 0.5 is medium, and  $\geq 0.8$  is large.

Discussion

Our first objective of the current research was to examine the relative effectiveness of three different approaches to the experience of body dissatisfaction compared to a control and ruminative attention control condition, with respect to increasing weight and appearance satisfaction, and decreasing distress about body feelings. These three approaches included cognitive dissonance, acceptance, and distraction. While cognitive dissonance has been established as an effective strategy for this purpose, researchers know little about the potential efficacy of the other two conditions. Consistent with our hypothesis, we found that weight satisfaction was significantly improved over a 5-min period after induction of body dissatisfaction when participants were instructed to use cognitive dissonance, acceptance, or distraction approaches compared to people in the control and ruminative attention control conditions. While cognitive dissonance, acceptance, and distraction approaches were all superior with respect to increasing appearance satisfaction compared to ruminative attention control, only people in the acceptance condition experienced significantly increased appearance satisfaction over time compared to those people in the

control condition. Different measures of clinical significance indicated that all three approaches were promising, where cognitive dissonance produced the most number of people who were very improved, and acceptance and distraction showed very large effect sizes (1.32 and 1.08, respectively) for within-group changes to weight satisfaction. Contrary to our second hypothesis, the acceptance condition did not significantly decrease distress about body feelings compared to the distraction group, as was found for a group of depressed outpatients (Singer & Dobson, 2007).

The brief intervention assessed in the current research can only indicate strategies that are worthy of further research in terms of developing more substantial strategies. One of the major contributions of this research is to provide a direct comparison between strategies that are clearly unhelpful for improving body dissatisfaction and those that show promise in this regard. In this way, we have identified two further strategies, acceptance and distraction, that may be useful in reducing body dissatisfaction in addition to cognitive dissonance. A further major contribution is that this research represents the first controlled evaluation of acceptance techniques for improving body satisfaction. While mindfulness

Table 5  
*Clinical Significance as Indicated by Number of People Who Were Judged as Very Improved in Each Condition*

Outcome measure	Control group		Acceptance					Distraction				Cognitive dissonance				Ruminative attention control							
	<i>N</i>	%	<i>N</i>	%	$\chi^2$	LR	<i>p</i>	<i>N</i>	%	$\chi^2$	LR	<i>p</i>	<i>N</i>	%	$\chi^2$	LR	<i>p</i>	<i>N</i>	%	$\chi^2$	LR	<i>p</i>	
Weight satisfaction																							
Improved	0	0	4	20	5.99		.01	5	25	7.65		.006	6	30	9.38		.002	1	5	1.41		.24	
Stayed the same	10	50	14	70				12	60				11	55				10	50				
Deteriorated	10	50	2	10				3	15				3	15				9	45				
Appearance satisfaction																							
Improved	2	10	9	45	6.53		.01	6	30	2.59		.11	8	40	3.75		.05	1	5	0.37		.55	
Stayed the same	10	50	10	50				12	60				10	50				11	55				
Deteriorated	8	40	1	5				2	10				2	10				8	40				

Note. *Very improved* was scored 1  $SD$  of the pooled baseline mean higher from postinduction visual analog scale to final visual analog scale (149.76 and 128.32 for the weight and appearance satisfaction variables, respectively).  $\chi^2$  LR = chi-square likelihood ratio using the control group as the comparison with respect to improvement only.

approaches have been evaluated across a number of clinical areas, methodological limitations have precluded strong conclusions (Baer, 2003), including omission of a control group and effective comparison treatments. In the current study, we overcome these limitations and provide strong evidence of the usefulness of acceptance as a strategy that can decrease body dissatisfaction, at least in the short term.

An acceptance approach may be well suited to the area of body dissatisfaction. *Acceptance*, defined as the ability to experience unpleasant or adverse events, thoughts, or feelings, without making judgments or evaluations and without the need to avoid, change, or control them, is said to alter one's relationship with negative experiences (Baer, 2003). There are three hypothesized mechanisms by which acceptance may exert its effects that have particular relevance to body dissatisfaction. First, the ability to observe nonjudgmentally and without evaluation encourages a noncritical view of self (Kristeller & Hallett, 1999), a particularly salient approach when considering body dissatisfaction, which concerns the evaluation of the physical body in a negative light (Stice & Shaw, 2002). Second, practicing acceptance may alter one's relationship with his or her experience through increasing metacognitive awareness of one's thought processes (Teasdale, Segal, & Williams, 1995). Thus, thoughts and feelings can be observed merely as thoughts and feelings and may not necessarily be depictive of oneself or even an accurate identification of reality (Baer, 2003), thus decreasing the likelihood of automatic responses and promoting a sense of control (Kabat-Zinn et al., 1992; Stewart, 2004). A third hypothesized mechanism of interest is that of exposure, which leads to a lessening of distress through desensitization (Baer, 2003; Kabat-Zinn et al., 1992). Rather than avoiding unpleasant thoughts and emotions, acceptance encourages their constant observation and therefore may produce a lessening in intensity through the habituation of reactive responses. Alternatively, based on recent exploration of exposure therapy (Craske et al., 2008), a tolerance of distress may be a result of new learning and the reshaping of memories pertaining to the stimulus. It should be noted that the lack of support for our second hypothesis (i.e., that acceptance would be superior with respect to decreasing distress about feelings about the body) may not support this latter suggestion, but further research is required with respect to the potential mechanisms of action of acceptance approaches.

Distraction was also indicated as being a powerful approach to improving weight and appearance satisfaction. However, the use of distraction for body dissatisfaction requires further research. While distraction decreases depression compared to rumination (Nolen-Hoeksema & Morrow, 1991), there is concern that this may be a temporary effect that leaves underlying schema still accessible and able to be triggered (Teasdale et al., 1995). Thus, the impact of the use of distraction over longer follow-up is required, in order for researchers to compare it to other approaches with respect to efficacy.

The current research also confirmed the usefulness of a cognitive dissonance approach, even with such an abbreviated version. The original protocol (Stice et al., 2006) involved a three-session small group format, where in addition to the concepts mentioned in our brief intervention, there were a number of differences, including (a) engagement of participants in discussion and interaction rather than using a didactic presentation, (b) presentation of the intervention in terms of devising ways to help younger girls avoid

body image problems, (c) discussion of the definition and origin of the thin ideal, (d) use of homework that included mirror exposure linked with the positive affirmations, and (e) generation of a 10-point list of ways to resist the thin ideal. While this version of cognitive dissonance has been shown to be superior to other credible techniques for reducing body dissatisfaction, such as expressive writing (Stice et al., 2006), media advocacy (Becker et al., 2006), yoga (Mitchell et al., 2007), and healthy weight interventions (Stice et al., 2001), our findings suggest that there could be some credible alternative approaches. Future researchers need to further develop these approaches and compare them to cognitive dissonance in longer term intervention studies in order to elucidate their clinical usefulness.

One of the major limitations of the current study is the absence of a check on internal validity and the implications for treatment fidelity (i.e., Were the interventions used reliably and validly?). Specifically, we do not know whether (a) participants were actually engaging in the assigned technique, (b) they were using the other techniques used by the other groups or some combination, or (c) they were using coping techniques other than the four described in the current study (Borrelli et al., 2005). Previous researchers using this design with a sample of depressed outpatients found that 10.7% did not adequately engage in the randomized technique (Singer & Dobson, 2007). Additionally, we do not expect that the control was literally a group who did nothing, so it is likely that they adopted a variety of approaches, including rumination, which seems to be the most widely adopted strategy by people experiencing body dissatisfaction (Nolen-Hoeksema et al., 2007), thus potentially causing some overlap in the groups. In future studies, researchers should include a variety of strategies to improve treatment fidelity and internal validity, such as having participants think aloud (Singer & Dobson, 2007) or demonstrate the required skill (Borrelli et al., 2005) in order to ensure that participants comprehend instructions and are adherent to intervention procedures. Exit interviews with participants can be conducted to assess whether participants were using the intervention approach to which they were assigned, and not using elements of the other approaches (Borrelli et al., 2005).

Other limitations of this research should also be taken into account when interpreting the results. First, the suitability of the use of these techniques with clinical populations needs to be further investigated. While the scores on our Eating Disorder Inventory measure indicated that around 6% of our participants may have clinically severe body dissatisfaction, participants were not screened for eating disorders in the current study, and thus the immediate usefulness of these approaches with people experiencing clinically significant body dissatisfaction is uncertain. Given that such a brief intervention is unlikely to be incorporated into therapy for people with eating disorders, it may be that the more lengthy training in, and practice of, these procedures, such as those used with people who have chronic depression (Ma & Teasdale, 2004; Teasdale et al., 2000), may be more effective. This is a question that future researchers need to answer in an appropriately designed study. Second, while the population examined in the current research represents a high-risk group for body dissatisfaction, it is not necessarily representative of the range of people who experience body dissatisfaction, including males. Third, in this research we only investigated brief interventions, and the longer term impact of using such strategies needs to be investigated

before conclusions can be made about their usefulness. Fourth, we did not preclude people in the ruminative attention control group from using active problem solving. As such, this condition may require further investigation where problem solving is explicitly disallowed, in order for researchers to examine whether rumination as defined in the literature (Nolen-Hoeksema, 2000) can actually cause deterioration in body satisfaction.

In sum, the results suggest that brief interventions related to acceptance, distraction, and cognitive dissonance showed significantly improved weight and appearance satisfaction in a female university student sample compared to ruminative attention control and the control conditions. Given that acceptance, cognitive dissonance, and distraction all showed promise in reducing body dissatisfaction, more research is required investigating the longer term efficacy of such approaches outside of laboratory settings and the types of people these approaches are most likely to benefit. Further, given the contradiction implied across the use of these different approaches, we do not know whether these approaches can be used together. Further research would need to inform clear evidence-based protocols for use within other treatment approaches.

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