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Effectiveness Trial of a Selective Dissonance-based Eating Disorder Prevention Program with Female College Students: Effects at 2- and 3-Year Follow-up

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Abstract

Objective—An efficacy trial found that a dissonance-based prevention program reduced risk factors, eating disorder symptoms, and future eating disorder onset, but smaller effects emerged when high school clinicians recruited students and delivered the program under real-world conditions in an effectiveness trial. The current report describes results at 2- and 3-year follow-up from an effectiveness trial that tested whether a new enhanced dissonance version of this program produced larger effects when college clinicians recruit students and deliver the intervention using improved train and supervision procedures.

Method—Young women from eight universities ($N = 408$, M age = 21.6, $SD = 5.64$) were randomized to the prevention program or an educational brochure control condition.

Results—Dissonance participants showed greater decreases in risk factors, eating disorder symptoms, and psychosocial impairment by 3-year follow-up than controls, but not healthcare utilization, BMI, or eating disorder onset.

Conclusions—This novel multisite effectiveness trial found that the enhanced dissonance intervention and improved training and supervision procedures produced an average effect size at 3-year follow-up that was 290% and 160% larger than effects observed in the high school effectiveness trial and efficacy trial respectively. Yet, the lack of eating disorder onset effects may imply that factors beyond pursuit of the thin ideal now contribute to eating disorder onset.

Keywords

prevention; body dissatisfaction; eating disorder; effectiveness trial; dissonance

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Eating disorders affect 13-15% of females and are marked by chronicity, relapse, distress, functional impairment, and risk for future obesity, depression, suicide attempts, anxiety disorders, substance abuse, and mortality (Allen, Byrne, Oddy, & Crosby, 2013; Arcelus, Mitchell, Wales, & Nielsen, 2011; Stice, Marti, & Rohde, 2013b; Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011). Accordingly, a critical public health priority is to develop and broadly implement effective eating disorder prevention programs.

To date, only three prevention programs have significantly reduced DSM-IV eating disorder symptoms (Atkinson & Wade, 2014; Stice, Marti, Spoor, Presnell, & Shaw, 2008; Stice, Rohde, Shaw, & Marti, 2013c) and only three prevention programs have significantly reduced future eating disorder onset (Martinsen et al., 2014; Stice et al., 2008; Stice et al., 2013c). However, only the *Body Project* has produced effects in multiple trials conducted by independent research teams. In this dissonance-based eating disorder prevention program young women with body dissatisfaction voluntarily critique the thin beauty ideal in verbal, written, and behavioral exercises, which theoretically reduces thin-ideal internalization because humans seek to maintain consistency between their behaviors and attitudes, which putatively decreases body dissatisfaction, unhealthy weight control behaviors, negative affect, eating disorder symptoms, and future eating disorder onset. The *Body Project* produced greater reductions in eating disorder risk factors, eating disorder symptoms, functional impairment, mental health service utilization, and eating disorder onset over a 3-year follow-up relative to assessment-only control conditions and three alternative interventions in efficacy trials conducted by independent teams (Becker, Smith, & Ciao, 2005; Halliwell & Diedrichs, 2014; Matussek, Wendt, & Wiseman, 2004; Mitchell, Mazzeo, Rausch, & Cooke, 2007; Stice et al., 2008; Stice, Rohde, Durant, & Shaw, 2012; Stice, Shaw, Burton, & Wade, 2006). In support of the intervention theory, reductions in thin-ideal internalization mediate the effects of the *Body Project* on symptom reductions (Seidel et al., 2009; Stice et al., 2007) and completing high- versus low-dissonance versions of this program resulted in greater symptom reductions (Green et al., 2005; McMillan et al., 2011). Moreover, completion of the *Body Project* eliminated the adverse effects of exposure to thin models on young women (Halliwell & Diedrichs, 2014) and reduced responsivity of brain reward region to thin models (Stice & Yokum, 2015).

Given the support for the *Body Project* from efficacy trials, the next step is to conduct effectiveness trials of this intervention. In contrast to efficacy trials, which test whether preventive interventions produce effects under carefully controlled experimental conditions, wherein research clinicians are thoroughly trained and supervised, the intervention is delivered in adequately staffed settings, and participants are homogenous, effectiveness trials test whether interventions produce effects when delivered by endogenous clinicians (e.g., school counselors) who receive less supervision under real world conditions in natural service provision settings with heterogeneous populations (Glasgow, Lichtenstein, & Marcus, 2003). The first effectiveness trial confirmed that the *Body Project* reduced eating disorder risk factors and symptoms when high school clinicians recruited students with body image concerns and delivered the intervention at schools, with significant eating disorder symptom reductions persisting through 3-year follow-up (Stice, Rohde, Gau, & Shaw, 2009; Stice, Rohde, Shaw, & Gau, 2011b). Yet the average effect size was 32% smaller than

observed in our large efficacy trial (Stice et al., 2006, 2008) and unlike the efficacy trial, there were no significant reductions in healthcare utilization and eating disorder onset over 3-year follow-up, suggesting the need to improve procedures for training and supervising clinicians. In addition, it is crucial to conduct effectiveness trials of eating disorder prevention programs in colleges because eating disorders often emerge during college (Stice et al., 2013b), there are over 10 million female college students in the U.S. (Department of Education, 2008), and colleges typically have an existing infrastructure for delivering prevention programs.

Thus, we initiated an effectiveness trial to evaluate the *Body Project* when college clinicians recruit female students at risk for eating pathology and deliver the intervention under ecologically valid conditions at universities. To maximize effects, we worked with clinicians who had experience delivering group interventions, improved the clinician training and supervision, and used a new enhanced dissonance version of the *Body Project* (McMillan et al., 2011). Another novel feature of the present study is that it is the first multisite trial of the *Body Project*. The report focusing on the acute effects found that *Body Project* participants showed significantly greater decreases in risk factors, eating disorder symptoms, and functional impairment than controls at posttest and 1-year follow-up, resulting in medium average effect size ($d = .60$), though there were no effects for healthcare utilization (Stice, Butryn, Rohde, Shaw, & Marti, 2013a). It was encouraging that the average effects were 83% larger than effects observed in the high school effectiveness trial. Herein we report the effects at 2- and 3-year follow-up from this effectiveness trial.

Methods

Participants and Procedure

Participants were 408 young women (M age = 21.6, $SD = 5.6$) recruited from 8 universities in Pennsylvania, Texas, and Oregon. Female undergraduate and graduate students, as well as university staff, could enroll if they reported body image concerns, who were targeted because they are at increased risk for future eating disorder onset (Beato-Fernandez et al., 2004; Jacobi et al., 2011; Stice, Marti, & Durant, 2011a). The sample was 58% European American, 17% Asian, 13% Hispanic, 7% African American, 4% Native Americans, and 1% Native Pacific Islander, which was representative of the universities from which we sampled (Stice et al., 2013a). Average parental education was 14% high school graduate or less, 25% some college, 32% college graduate, and 28% advanced graduate or professional degree. Participants were randomly assigned to the *Body Project* ($n = 203$) or an educational brochure control condition ($n = 205$) via a random number table. The *Body Project* consisted of 4 weekly 1-hour group sessions with 5-9 participants. Facilitators delivered the intervention using a scripted manual. The acute effects report provides details regarding recruitment, screening, consent procedures, facilitator characteristics, and training and supervision of facilitators (Stice et al., 2013a).

Participants completed assessments at pretest, posttest, and at 1-, 2-, and 3-year follow-ups (see Figure 1 for a participant flowchart). They were paid \$30 to \$40 for completing each assessment. Female assessors, who had a B.A. or M.A. in psychology, were blinded to condition. Assessors attended 24 hours of training, wherein they received instruction in

interview skills, reviewed eating disorder diagnostic criteria, observed simulated interviews, and role-played interviews. They also attended annual refresher trainings. Assessors had to demonstrate inter-rater agreement ($\kappa [k] > .80$) with supervisors using 12 audio-recorded interviews before collecting data. Weekly consensus meetings resolved diagnostic ambiguities. The institutional review board at each campus approved this project.

Interventions

Body Project—In session 1 participants collectively define the thin ideal, discuss costs of pursuing this ideal, and are assigned home exercises (e.g., write an essay about the costs associated with pursuing the thin ideal). In session 2 participants discuss each home exercise, dissuade facilitators from pursuing the thin ideal in role-plays, and are assigned more exercises (e.g., generate a top-10 list of things young women can do to challenge the thin ideal). In session 3 participants discuss home exercises, conduct role-plays challenging thin-ideal statements, discuss personal body image concerns, and are assigned home exercises (e.g., engage in a behavior that challenges their body image concerns). In session 4 participants discuss home exercises, plan for future pressures to be thin, discuss perceived benefits of the group, and are assigned exit home exercises (e.g., write a letter to a younger adolescent girl about avoiding body image concerns). To increase dissonance-induction, we underscored the voluntary nature of participation, increased accountability (e.g., by videotaping sessions), and increased the amount of effort required on the part of participants relative to the original *Body Project*.

Educational brochure control condition—Participants in the control condition received a brochure from the National Eating Disorders Association describing negative and positive body image, noting that negative body image increases risk for eating disorder onset, and offering 10 steps for achieving a positive body image. They also received a brochure from the American Psychological Association describing eating disorders and factors that predict onset of these disorders. Participants in both conditions also were given a referral list of local mental health treatment providers with expertise in eating disorders at each assessment.

Measures

The measures used to assess thin-ideal internalization, body dissatisfaction, dieting, negative affect, eating disorder symptoms, psychosocial impairment, and health/mental health care utilization were described in the initial report from this project, along with relevant psychometric information (Stice et al., 2013a). The semi-structured Eating Disorder Diagnostic Interview (EDDI) assessed DSM-IV eating disorder diagnoses have shown test-retest reliability ($\kappa = .96$), inter-rater agreement ($\kappa = .86$), and sensitivity to intervention effects (Stice et al., 2008, 2009).

Statistical Methods

Missing data—Following best-practice recommendations from Graham (2009), multiple imputation was used to replace missing data. Values were imputed using the R Amelia package (Honaker, King, & Blackwell, 2011), which uses all available data to impute longitudinal missing data via bootstrapping. Distributions of the observed and imputed data

were inspected to ensure they showed comparable distributions. 20 data sets were created that contained the non-missing data and imputed values for missing data. Each data set was analyzed separately and model parameters and standard errors were derived following Rubin (1987). We also assessed whether attrition was associated with pretest measures of the primary outcomes by fitting generalized linear mixed models in which missingness at each follow-up wave was coded 1 if missing and 0 otherwise. Missingness was regressed on the baseline measure of each of the primary outcomes.

Preliminary analyses—Dependent variable distributions were examined with histograms. In the event of skewed or kurtotic distributions, we transformed data so that distributions better approximated normal distributions to minimize possible undesirable model characteristics, including non-linearity, heterogeneous variance, and outliers. We compared outcomes and demographic variables across conditions at pretest on to evaluate whether randomization created equivalent groups.

Model building—Linear mixed effects models were fit with the lme function in the nlme package from the R project (Pinheiro, Bates, DebRoy, Sarkar, & R Core Team, 2013). These models accommodate multilevel data structures and unevenly spaced longitudinal data. Prior to model-building, we examined intervention groups and study sites as a source of non-independence by treating them as level-3 random factors in a multilevel structure, in which level-1 units were time points, and level-2 units were participants. Intervention group random effects were evaluated using a partially clustered design (Baldwin, Bauer, Stice, & Rohde, 2011) that accounts for group variability in study designs in which participants in one condition are in clusters (i.e., *Body Project* groups) and participants in the other condition are not (i.e., educational brochure controls). The intervention effect is treated as random on prevention groups with a fixed level-3 intercept, to reflect the fact that only the intervention participants exhibited this random effect. The 3-level model examining site variability nested participants within sites in a standard multilevel structure. A deviance test that compared models with and without a level-3 random coefficient was used to assess where there was significant variability and the term was retained if significant.

Following Singer and Willett (2003) the longitudinal portion of the model was constructed using the following steps: (a) empirical growth plots were examined; (b) unconditional means models were fit; (c) unconditional linear growth models were fit; (d) unconditional non-linear models were fit; (e) models in the previous two steps were compared using the Akaike Information Criterion (AIC); and (f) level-2 predictors and cross-level interactions were added to the models. For the fourth step, we evaluated several nonlinear models. A longitudinal elevation change model assessed elevation change (i.e., mean difference) between pretest and follow-up time points (posttest, 1-, 2-, and 3-year follow-ups). A longitudinal elevation and slope change model added a slope parameter to the previous model that represented change in the outcome following the intervention. Natural-log and quadratic time models were also assessed. The longitudinal elevation change model had the lowest AIC value with the exception of the BMI model and was thus used to model time with the exception of the BMI model; henceforth, time effects are simply referred to as time. Longitudinal change in elevation change model is dummy coded (pretest = 0, posttest time

points = 1), serving to contrast pretest values with the average across follow-up time points. In the final model-building step, the pretest outcome value, condition (*Body Project* condition = 1), and time $\times$ condition interaction were added.

Eating disorder onset—Onset of eating disorders was assessed in a proportional hazard model in which time to onset of a sub- or full-threshold DSM-IV eating disorder was regressed on intervention condition among participants who did not have an eating disorder at baseline ($n = 380$). At baseline 17 (8.4%) of participants in the *Body Project* condition met criteria for a subthreshold DSM-IV eating disorder, versus 11 (5.4%) of participants in the control condition, which was not a significant difference.

Results

Preliminary analyses

A natural log transformation was used to normalize negative affect, eating disorder symptoms, health care utilization, and mental health care utilization. Participants in the two conditions did not differ significantly on demographics or outcomes at pretest. Table 1 provides means and SDs for outcomes at each time point across conditions. Data were complete at pretest, 1% were missing at posttest, 8% were missing at the 1-year follow-up, 8% were missing at the 2-year follow-up, and 15% were missing at the 3-year follow-up. None of the pretest outcomes were significantly associated with missingness. Assessment of level-3 random coefficients indicated no significant variability attributable to groups in the partially clustered models; however, significant variability attributable to site was present for the dieting and eating disorder symptoms. Thus, all models were fit as two-level models in which time points were nested within individuals with the exception of dieting and eating disorder symptoms, which contained a level-3 random effect for site.

Primary outcome analyses

Significant condition $\times$ time effects through 3-year follow-up were present for all five primary outcomes: thin-ideal internalization ($t [395] = -6.12, p < .001$), body dissatisfaction ($t [389] = -5.29, p < .001$), dieting ($t [393] = -4.78, p < .001$), negative affect ($t [387] = -4.25, p < .001$), and eating disorder symptoms ($t [398] = -5.22, p < .001$). In each case, the interaction indicated that the decrease between pretest and the two follow-up measures was greater for *Body Project* participants than control participants.

Secondary outcome analyses

There was a significant condition $\times$ time effect for psychosocial impairment ($t [395] = -3.28, p < .001$), indicating greater improvements in *Body Project* versus control participants over follow-up. The condition $\times$ time effect was not significant for BMI ($t [353] = -0.71, p = .479$), health care utilization ($t [385] = -0.05, p = .956$), or mental health care utilization ($t [390] = 1.18, p = .239$). Parameter estimates, coefficients, 95% confidence intervals, and p-values of the terms from the models that tested for the effects on primary and secondary outcomes are provided in the Supplementary Material section. Table 2 provides the effect sizes for the significant intervention effects.

Eating disorder onset

There was no difference in time to onset of DSM-IV eating disorders across conditions ($z = 1.39, p = .165$). Twenty-four *Body Project* participants (12.9%) met a DSM-IV diagnosis during the 3-year follow-up (bulimia nervosa [BN] = 5, binge eating disorder [BED] = 2, atypical anorexia nervosa [AN] = 2, subthreshold BN = 18, subthreshold BED = 7, purging disorder = 3; 9 participants exhibited more than one eating disorder diagnosis during follow-up). Twenty-five control participants (12.9%) met a DSM-IV diagnosis over follow-up (BN = 2, BED = 2, subthreshold BN = 17, subthreshold BED = 8, purging disorder = 6; 8 participants exhibited more than one eating disorder diagnosis during follow-up). The pattern of eating disorder diagnosis was similar across conditions (e.g., most common diagnosis was subthreshold BN followed by having multiple eating disorder diagnoses).

Discussion

This is the first effectiveness trial to evaluate the *Body Project* when college clinicians recruit high-risk female college students for this selective eating disorder prevention program and deliver it under ecologically valid conditions in typical service provision settings (Stice et al., 2013a). It is also the first trial of the new enhanced dissonance version of the *Body Project* and the first multisite trial of this prevention program. The *Body Project* produced significantly greater reductions in eating disorder risk factors and symptoms than observed in educational brochure controls. The average effect size at 3-year follow-up was $d = .32$, which indicates that the *Body Project* produced approximately a 1/3rd standard deviation reduction in these continuous outcomes, which is clinically meaningful. The average effect size was 290% larger than the parallel average effect size from the high school effectiveness trial ($d = .11$; Stice et al., 2011) and 160% larger than the parallel average effect size from the efficacy trial ($d = .20$; Stice et al., 2008). No other eating disorder prevention program has produced significant reductions in eating disorder symptoms at 3-year follow-up, although the *Healthy Weight* prevention program did produce significant reductions in this outcome relative to control participants at 2-year follow-up ($d = .26$; Stice et al., 2013c). Thus, results suggest that the brief 4-hour *Body Project* prevention program produces effects over 3-year follow-up when college clinicians deliver this intervention under typical service delivery conditions. The larger effects in the present trial apparently emerged because we used the new enhanced dissonance version of the *Body Project*, improved facilitator training and supervision procedures, and worked with college clinicians who had greater expertise delivering group-based interventions than their high school counterparts. Results imply that it would be prudent to use the new enhanced dissonance script, employ the new training and supervision procedures, and work with clinicians experienced in delivering group interventions.

Results also suggested that the *Body Project* produced significant improvements in psychosocial impairment relative to the control condition. This is important because it implies that this brief prevention program improved functioning in the family, peer, school, and work domains, producing effects that persisted over long-term follow-up. The reductions in body dissatisfaction, negative affect, and eating disorder symptoms from participating in the *Body Project* may have increased the participant's comfort in social

engagement and ability to focus on school and work, which improved relations with family, peers, teachers, and co-workers that account for the improved functioning in these domains. This finding is novel in that only one past trial has found reductions in psychosocial impairment from an eating disorder prevention program: The *Body Project* reduced psychosocial impairment through 3-year follow-up relative to assessment-only controls and two alternative active interventions in our large efficacy trial (Stice et al., 2008). The fact that the previous high school effectiveness trial did not observe significant effects for psychosocial impairment (Stice et al., 2011b) suggests that the steps we took to improve intervention effects from the *Body Project* in the present trial may have contributed to improved effects regarding functional impairment.

However, the *Body Project* did not significantly affect body mass or healthcare utilization. This intervention significantly reduced obesity onset and health care utilization in the high school/college efficacy trial (Stice et al., 2006), but not in the prior high school effectiveness trial (Stice et al., 2011b). The pattern of findings suggests that although the intervention typically reduces eating disorder symptoms, including binge eating, this prevention effect does not translate into reductions in excess weight. The fact that participants in both conditions had an average BMI at pretest that was in the healthy weight range and only increased slightly implies that participants showed only modest weight gain over follow-up. Results also suggest that it is challenging to reduce health and mental health care utilization with brief eating disorder prevention program. To our knowledge, only two eating disorder prevention programs have significantly reduced unhealthy weight gain (c.f., Jones et al., 2008; Stice et al., 2006, 2008, 2012) and no other eating disorder prevention program has significantly reduced healthcare utilization.

It was also disappointing that the eating disorder onset prevention effects observed in the efficacy trial (Stice et al., 2008) did not replicate in either the high school effectiveness trial (Stice et al., 2011b) or the present college effectiveness trial. Although it is tempting to conclude that this pattern of results suggests that the *Body Project* does not reduce eating disorder onset when implemented by clinicians under real-world condition, the *Body Project* did produce larger eating disorder symptom reductions through 3-year follow-up when delivered by college clinicians versus both high school clinicians and research clinicians. Specifically, we observed larger reductions in eating disorder symptoms for *Body Project* participants than for controls by 3-year follow-up in the present trial ($d = .39$) than observed in the high school effectiveness trial ($d = .30$; Stice et al., 2011b) or the high school/college efficacy trial ($d = .07$; Stice et al., 2008). This pattern of findings implies that college clinicians did deliver the *Body Project* in an effective manner in terms of significantly reducing eating disorder symptom levels but not in preventing eating disorder onset. The fact that the *Healthy Weight* prevention program, which aims to prevent eating disorder onset through small but lasting changes in dietary intake and exercise levels, has significantly reduced future eating disorder onset in two separate trials involving college women (Stice et al., 2008; Stice et al., 2013c) suggests that this prevention program produces more robust reductions in eating disorder onset.

Limitations

Several limitations in this study should be considered when interpreting the results. Although the control group received educational information, the conditions were not matched on contact with a clinician. The retention rate was high and similar across conditions and attrition was not associated with any of the outcome measures at pretest, but participants who could not be reached for follow-up assessments may have differed in a systematic way from those who completed the assessments on some unmeasured factor, so attrition bias cannot be ruled out. As this was an effectiveness trial, there were few inclusion or exclusion criteria, but the proportion of total students from each campus who participated was still relatively low, leaving the possibility that a selection bias in participation may have occurred. Finally, all of the outcomes that showed reductions in this trial were based on self-report data, raising the possibility that demand characteristics inherent to randomized trials might have contributed to the observed effects. Future research should therefore attempt to incorporate more biological and objective outcomes.

Implications for Prevention and Future Research

This trial confirmed that it is feasible for college clinicians to successfully implement the *Body Project* on college campuses and produce clinically meaningful intervention effects that persist over time. Endogenous providers on college campuses were able to recruit young women at high-risk for eating disorders and to be trained and supervised in effective intervention delivery. *Body Project* participants demonstrated clinically meaningful benefits from the intervention, with meaningful decreases in eating disorder risk factors and symptoms through 3-year follow-up. The size and duration of these effects is especially compelling given that the group-based intervention was only 4 hours in duration. These findings suggest that broad scale dissemination of the *Body Project* on college campuses is warranted.

Given the promising evidence-based for the *Body Project*, it would be useful to investigate more cost-effective methods of implementing this prevention program on a broad basis, such as by using peer leaders or the Internet (e.g., Becker et al., 2010; Stice et al., 2012). However, it will also be crucial to conduct systematic research on alternative eating disorder prevention programs that appear more effective in reducing eating disorder onset, such as the *Healthy Weight* prevention program. As the science of prevention becomes more advanced in multiple domains of mental and physical health, it also may be important to consider how the *Body Project* could be integrated with other prevention efforts, such as those for obesity, depression, or substance abuse.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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- Tested eating disorder prevention when college clinicians recruit and deliver program
- 3-year follow-up data presented on 408 women randomized to group or brochure control
- Average effect size for eating disorder risk factors and symptoms was $d = .32$
- Program achieved effects for psychosocial impairment but not eating disorder onset
- Real-world clinicians can obtain meaningful eating disorder prevention effects

Figure 1.
Participant Flow Throughout Study

Table 1

Means and standard deviations for outcomes by condition at pretest, posttest, 1-year follow-up, 2-year follow-up, and 3-year follow-up

Variable	Pretest	Posttest	1-year follow-up	2-year follow-up	3-year follow-up
Thin-ideal internalization					
Brochure controls	3.84 (0.55)	3.80 (0.55)	3.74 (0.65)	3.67 (0.61)	3.69 (0.60)
Body Project	3.90 (0.58)	3.43 (0.68)	3.53 (0.61)	3.55 (0.73)	3.44 (0.66)
Body dissatisfaction					
Brochure controls	3.31 (0.7)	3.16 (0.72)	3.09 (0.75)	2.99 (0.73)	2.96 (0.79)
Body Project	3.40 (0.73)	2.81 (0.76)	2.80 (0.79)	2.92 (0.82)	2.84 (0.78)
Dieting					
Brochure controls	2.76 (0.87)	2.58 (0.87)	2.56 (0.87)	2.41 (0.85)	2.31 (0.87)
Body Project	2.87 (0.88)	2.25 (0.90)	2.26 (0.85)	2.38 (0.89)	2.29 (0.85)
Negative affect					
Brochure controls	11.58 (8.59)	10.40 (8.58)	9.90 (9.20)	9.77 (9.43)	8.83 (8.76)
Body Project	12.54 (9.10)	7.72 (8.19)	8.06 (8.12)	7.73 (7.12)	8.04 (8.47)
Eating disorder symptoms					
Brochure controls	10.99 (9.03)	9.53 (10.13)	10.13 (9.96)	9.82 (11.36)	8.67 (9.14)
Body Project	12.7 (10.53)	7.47 (8.52)	10.47 (21.96)	8.88 (13.44)	8.07 (11.49)
BMI					
Brochure controls	24.15 (5.36)	24.07 (5.28)	24.28 (5.61)	24.32 (5.82)	24.45 (5.45)
Body Project	24.72 (4.69)	24.98 (5.22)	25.05 (5.24)	25.33 (5.55)	25.34 (5.51)
Psychosocial impairment					
Brochure controls	2.22 (0.48)	2.16 (0.49)	2.17 (0.50)	2.18 (0.53)	2.12 (0.48)
Body Project	2.27 (0.47)	2.05 (0.45)	2.07 (0.49)	2.11 (0.47)	2.14 (0.48)
Health service utilization					
Brochure controls	1.61 (5.63)	0.84 (2.52)	1.53 (3.75)	0.89 (2.30)	1.28 (3.91)
Body Project	1.15 (2.17)	0.88 (2.81)	1.07 (2.38)	1.38 (3.39)	0.9 (1.99)
Mental health service utilization					
Brochure controls	2.02 (5.90)	1.37 (4.39)	1.76 (6.18)	1.31 (5.48)	1.13 (3.29)
Body Project	1.71 (5.97)	1.41 (3.87)	3.02 (23.73)	2.74 (13.09)	1.25 (3.44)

Table 2

Effect Sizes (d) for change in outcome in the Body Project intervention group relative to the brochure control condition

Outcome	Pre-to-post	Pre-to-1-year follow-up	Pre-to-2-year follow-up	Pre-to-3-year follow-up
Thin-ideal internalization	-0.77	-0.48	-0.33	-0.54
Body dissatisfaction	-0.64	-0.54	-0.24	-0.30
Dieting	-0.50	-0.47	-0.15	-0.15
Negative affect	-0.53	-0.38	-0.29	-0.22
Eating disorder symptoms	-0.54	-0.40	-0.33	-0.39
Psychosocial impairment	-0.34	-0.32	-0.26	-0.07