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The Body Project 4 All: A pilot randomized controlled trial of a mixed-gender dissonance-based body image program

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Abstract

Objective—The *Body Project* is a cognitive dissonance-based body image improvement program with ample research support among female samples. More recently, researchers have highlighted the extent of male body dissatisfaction and disordered eating behaviors; however, boys/men have not been included in the majority of body image improvement programs. This study aims to explore the efficacy of a mixed-gender *Body Project* compared to the historically female-only body image intervention program.

Method—Participants included male and female college students (N=185) across two sites. We randomly assigned women to a mixed-gender modification of the two-session, peer-led *Body Project* (MG), the two-session, peer-led, female-only (FO) *Body Project*, or a waitlist control (WL), and men to either MG or WL. Participants completed self-report measures assessing negative affect, appearance-ideal internalization, body satisfaction, and eating disorder pathology at baseline, post-test, and at two- and six-month follow-up.

Results—We used linear mixed effects modeling to estimate the change from baseline over time for each dependent variable across conditions. For women, results were mixed regarding post-intervention improvement compared to WL, and were largely non-significant compared to WL at 6-month follow-up. Alternatively, results indicated that men in MG consistently improved

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Conflict of Interest Statement

Dr. Becker is Co-Director of the Body Project Collaborative, a social entrepreneurship company created in 2012 to advance dissemination and implementation of the Body Project. Dr. Kilpela serves as a trainer for the Body Project Collaborative.

compared to WL through 6-month follow-up on all measures except negative affect and appearance-ideal internalization.

Discussion—Results differed markedly between female and male samples, and were more promising for men than for women. Various explanations are provided, and further research is warranted prior to drawing firm conclusions regarding mixed-gender programming of the *Body Project*.

Keywords

body image intervention; risk factor reduction; mixed-gender programming; peer-leaders; body dissatisfaction

Research indicates that body dissatisfaction predicts, often prospectively, increases in low self-esteem, emotional eating, binge eating, unhealthy weight control behaviors, full syndrome eating disorders (EDs), depression, decreased physical activity and increased weight gain in adolescent and young adult female populations.[1–4] Among college students, some evidence also supports a link between body dissatisfaction and engaging in smoking behavior.[5] Given the deleterious psychological and physical health outcomes associated with body dissatisfaction, interventions targeting body dissatisfaction offer promising avenues for reducing risk of copious negative sequelae, including early ED pathology.

The *Body Project* is an empirically supported cognitive dissonance-based intervention designed to target thin-ideal internalization among young women and adolescent girls. Thin-ideal internalization (i.e., the degree to which young women endorse the thin-ideal standard of female beauty) is an established risk factor for body dissatisfaction.[6] Developed by Stice and colleagues,[7] the *Body Project* engages participants in activities designed to elicit anti-thin-ideal speech and behavior with the aim of inducing the psychological discomfort associated with cognitive dissonance. Theoretically, to reconcile this discomfort, participants shift their belief system to align with their behavior, thus reducing thin-ideal internalization and associated ED risk factors including body dissatisfaction, negative affect, dietary restraint, and disordered eating behaviors.[7]

Results from over 25 trials conducted by multiple independent labs suggest that the *Body Project* is an effective approach to improving body satisfaction and other ED risk factors for a variety of adolescent and young adult female populations (see[8,9] for review). In addition, results from one large-scale efficacy trial found that the *Body Project* reduced the onset of EDs relative to an assessment-only control condition at three-year follow-up.[10] Secondary to the extensive empirical support for the *Body Project*, researchers and stakeholders alike have sought to increase clinical utilization via dissemination using community participatory research methods that engage stakeholders as partners.[11] For instance, to date the *Body Project* has been delivered to female participants on over 100 university campuses in North America.

The *Body Project* traditionally has been studied with female-only populations. Yet, there are several reasons for expanding research on the *Body Project* to include boys/men. First, recent research indicates that body dissatisfaction among boys/men occurs across the

lifespan, including college years,[12] and is associated with various health problems, including depression, low self-esteem, poor psychological adjustment, overall dissatisfaction with life, and increased risk for illicit drug use and binge drinking.[12–17] The prevalence and associated consequences of male body dissatisfaction are more significant than once acknowledged, and therefore warrant efforts to target body dissatisfaction among boys/men. Of note, although both female and male appearance-ideals emphasize very low body fat, the male appearance-ideal also includes increased muscularity.[14] Thus, male body image disturbance often includes a drive for muscularity while maintaining leanness.[14]

Second, as articulated by Levine and colleagues,[18,19] boys/men play a pivotal role both in perpetuating female societal appearance ideals as well as in combating these ideals. More specifically, boys/men can promote the female thin-ideal through actions and statements regarding feminine attractiveness, both of which further perpetuate the sexual objectification of women's bodies.[18] Ultimately, Levine argues that activating men in combating sociocultural appearance pressures toward women is imperative in order to reduce the societal impact of body dissatisfaction. One avenue for engaging men in reducing body dissatisfaction for both men and women is to include them together in body image interventions.

Third, stakeholder partners have expressed a desire to expand delivery of the *Body Project* to men, in part for the above reasons. Further, university partners have raised concerns that large-scale implementation of single-sex programming raises possible infringements on Title IX of the Education Amendments of 1972[20] which provides protection from sex-based discrimination in programs or activities within institutions/agencies that receive funding from the United States (USA) Department of Education. Such agencies include school districts and universities,[20] which constitute many of the stakeholder groups that have partnered in USA dissemination of the *Body Project*. Therefore, providing either mixed-gender programming or a male-only alternative program is desirable on university campuses from a Title IX perspective. Other stakeholder groups (e.g., high schools) also have expressed a desire to expand delivery of the *Body Project* into mixed-gender populations. Taken together, there appears to be a burgeoning call by stakeholders for body image programming for boys/men at both the high school and collegiate level.

There are reasons, however, to be concerned about mixed-gender body image programming. For instance, results of a meta-analytic review of ED prevention programs found that female-only versus mixed-gender programs had greater effect sizes for body dissatisfaction and dieting at follow-up.[21] It is important to note, however, that smaller effects for boys/men in the mixed-gender groups may have driven these results versus decreased effects for female participants. Nonetheless, clinicians and researchers experienced with the *Body Project* also have raised concerns that women will be more reluctant to speak in front of men, which could reduce the dissonance experienced and the effects for women. Thus, while mixed-gender programming might be beneficial to both men and women, such programming also might decrease the effectiveness for women.

The purpose of the current pilot study was to conduct a preliminary evaluation of the efficacy of a mixed-gender version of the *Body Project* (i.e., the *Body Project for All*

(*BP4All*)), and to address two primary aims. The first aim sought to investigate the efficacy of the peer-led mixed-gender *BP4All* in female participants through 6-month follow-up. To address this aim, we compared female participants randomized to *BP4All,* to the female-only version of the *Body Project,* and to a waitlist control condition. We hypothesized that women in both versions of the *Body Project* would benefit relative to waitlist control condition, but that women in the female-only version of the *Body Project* would benefit to a greater degree compared to waitlist than women in the mixed-gender version. The second aim sought to investigate the efficacy of the mixed-gender *BP4All* as compared to waitlist control in male participants through 6-month follow-up. For men, we hypothesized that male participants in *BP4All* would show greater improvements in body dissatisfaction and related variables as compared to waitlist control.

METHOD

Participants

Undergraduate students at two liberal arts colleges participated in the study. Of the initial 196 enrolled participants, 11 were removed from analyses due to meeting probable criteria for an eating disorder (ED) based on baseline EDE-Q responses, as we have done in previous trials. The final sample consisted of 185 participants; 62% were female (n = 115) and ranged in age from 18 to 23 (M=19.9 ± 1.2 years). Participants' mean Body Mass Index (BMI), calculated from self-reported height and weight, was 23.29 ± 3.96; the mean BMI for male and female participants was 23.86 ± 3.89 and 22.95 ± 3.97 respectively. Seventy-six percent (76.2%) identified as Caucasian.

Procedure

Overview and participant flow—Prior to beginning the study, the Institutional Review Boards at both universities approved the study. We recruited participants through announcements in classes and club meetings, and campus advertisements (e.g. banners, posters, and online forums). Given the logistics of scheduling group sessions, participants provided consent in two steps. Fist, prior to study enrollment, interested participants provided informal consent to randomization only. We recruited a total of 271 participants who consented to randomization (Figure 1), which was stratified by site. Then, a research assistant contacted interested individuals to provide more information and schedule either group sessions (intervention groups) or individual appointments (waitlist control). Seventy-five individuals who expressed initial interest did not show up to groups when scheduled, did not respond to attempts to schedule or declined to participate via email when contacted for scheduling; in the cases when we were able to find the reason for non-participation, most cited time/schedule constraints and feeling too busy. Informed consent for study participation and subsequent enrollment into the study occurred at the beginning of the first visit.

We randomized women (n = 180) to a Mixed-Gender *BP4All* condition (MG; n = 77), Female-Only *Body Project* condition (FO; n = 65), or Waitlist control (WL; n = 38). Of the women randomized, 49 women assigned to MG, 41 women assigned to FO, and 36 women randomized to WL consented and completed baseline data. Regarding retention, 86%

(42/49) in MG, 93% (38/41) in FO, and 100% (36/36) in WL completed post-test assessments, 73% (36/49) in MG, 95% (39/41) in FO, and 94% (34/36%) in WL completed 2-month follow-up, and 80% (39/49) in MG, 95% (39/41) in FO, and 92% (33/36) in WL completed 6-month follow-up.

We randomized men (n = 91) to either MG (n = 45) or WL (n = 46). Thirty-six men assigned to MG and 34 assigned to WL consented and provided baseline data. For male participants, 94% (34/36) in the MG group and 91% (31/34) in the WL group completed post-test assessments, 100% (36/36) in the MG group and 85% (29/34) in the WL group completed 2-month follow-up, and 94% (34/36) in the MG group and 68% (23/34) in the WL group completed 6-month follow-up assessments.

Participants completed pre- and post-test assessments in person, and 2- and 6-month follow-up assessments either in person or via online survey (SurveyMonkey or Qualtrics). Participants in all conditions received $20.00 at post-test assessment for completing both the baseline and post-test assessments, and $15.00 for completing each follow-up assessment.

Waitlist Control

Participants assigned to the WL condition completed baseline, one-week (post-test), and 2- and 6-month follow-up assessments. WL condition participants were offered the opportunity to complete the program once they completed their 6-month follow-up.

Interventions

The *Body Project* intervention consisted of two, 2-hour small-group sessions delivered by 2–3 peer-leaders (PLs) scheduled approximately one week apart. The two variants of the *Body Project* were identical in terms of program length (4 hours total), format (interactive, discussion-based), and application of dissonance-induction. Of note, MG utilized both male and female PLs (with at least one male and one female PL per group), while FO utilized only female PLs. Program activities were similar in both conditions, and content differed only with regards to gender perspectives on appearance ideals and experiences.

Female-Only Intervention—The first session began by eliciting voluntary commitment to participate. The session included: a) collectively defining the thin-ideal and contrasting it with the healthy-ideal; b) reviewing the origin and maintenance of the thin-ideal; c) describing costs associated with pursuing the thin-ideal; d) identifying past pressures to conform to the thin-ideal, then practicing verbal challenges to those pressures; e) combating negative body-talk statements; and f) committing to between-session exercises, including 1) mirror exposure, 2) a behavioral challenge to engage in a behavior normally avoided due to body image concerns and 3) writing a letter to a younger girl about the costs associated with pursuing the thin-ideal.

The second session included: a) the voluntary commitment; b) reading aloud the letter homework; c) mirror exposure debriefing; d) behavioral challenge debriefing; e) role plays in which participants attempt to convince PLs to cease pursuit of the thin-ideal; f) creating body activism activities to combat societal pressures; g) identifying future pressures to pursue to the thin-ideal and strategies to combat these pressures; h) combating negative

body-talk; i) discussing benefits of body acceptance; and j) receiving exit exercises, which included 1) a self-affirmation activity, and 2) a second letter to a younger girl (see www.bodyprojectsupport.org for scripts).

Mixed-Gender Intervention—The mixed-gender intervention maintained all activities in the same order, approximate time allocation, and format as the female-only intervention. To modify the script to apply to a mixed-gender population, two female research assistants (RAs) at the experienced site (described below) held two focus groups to solicit opinions from male students regarding the relevancy of material to male undergraduate populations. Participants suggested modifications to activities, language, and examples for each activity (e.g., body-talk in the locker room). Two male undergraduate RAs then provided further feedback regarding program material and modifications. The MG group collectively defined both the thin-ideal for women and the muscular-ideal for men, which we termed the "cultural appearance-ideals" for both genders. Additionally, we adapted role-plays, examples, and negative body-talk statements to include examples from both male and female perspectives. Furthermore, discussions organically included both genders' perspectives during activities in which participants identified personal experiences (e.g. social pressures, behavioral challenge exercises, etc.).

Peer-Leaders and Peer-Leader Training

In this two-site trial, one site had extensive experience with implementation and training of peer-leaders (PLs) in the female-only *Body Project* intervention (i.e., experienced site), while the second site had very limited experience (i.e., novice site). Therefore, we deployed authors from the experienced site (first and last authors) to train the PI from the novice site (second author) using train-the-trainer (TTT) methodology. In a proof-of-concept study, Kilpela and colleagues[22] demonstrated that TTT trainers could effectively train PLs to deliver the *Body Project* without detrimental effects to either program effectiveness at the participant outcome level or PL protocol adherence. For this study, we utilized the existing TTT model to train the novice site PI and PLs in a two-day intensive training, which Greif and colleagues[23] found yielded comparable 5-month outcomes to more controlled trials of the *Body Project* among female participants for body satisfaction, thin-ideal internalization, and ED symptomatology.

Experienced Site—This site had existing female PLs from previous studies. Therefore, we first identified two strong female PLs, who also served as student RAs, to co-lead a MG pilot group along with the first author. We then recruited additional male and female PLs by identifying existing leaders in student constituencies on campus. We requested that PL volunteers self-screen for substantial body image concerns and/or ED behaviors because they would serve as role models for the program and such contradictory behaviors would undermine the program message. We have used this method in previous research with no evidence of significant problems. The two female RAs then led a second MG pilot group for male and female undergraduate students interested in becoming PLs.

To be eligible for PL training, students had to have attended either the FO *Body Project* in the context of another university sub-system (e.g. sorority) or one of the MG pilot groups.

PL training sessions for both interventions were structured identically, using the same PL training format described in past research, involving two, 4.5-hour experiential training sessions; one training session for each program session.[22] Fourteen PLs completed training at the experienced site.

Novice Site—PLs were recruited via email to psychology and health science majors, a student mental health organization, flyers posted around campus, and word-of-mouth. In addition to the self-screening, PL candidates submitted résumés and met individually with the PI to review the program and PL training/commitment. The first and senior authors trained the novice site PI and eight PLs (5 female and 3 male PLs) during the initial TTT training on the FO version, as the MG script was still in development. Of note, as this training session included both male and female PLs, mixed-gender discussions arose organically. The novice site PI then recruited and trained four additional female PLs using the same training method. One PL dropped out due to time constraints, resulting in 11 PLs at the second site.

Measures

Negative Affect—We utilized the 17-item negative affect subscale of the Positive and Negative Affect Schedule (PANAS[24]) to assess negative affect over the past three weeks; higher scores on the PANAS indicate greater negative affect. The negative affect subscale of the PANAS has good internal consistency and a positive correlation with depression, which demonstrates moderate construct validity.[24] Internal consistency in this sample was good for women (Cronbach's α = .90) and for men (α = .95).

Appearance-Ideal Internalization—We assessed internalization of societal appearance ideals using the 22-item Sociocultural Attitudes Towards Appearance Questionnaire - 4 (SATAQ-4[25]), on which higher scores suggest greater internalization. Research[25] supports the internal consistency of the overall score in both female samples (α = .93) and male samples (α = .95). Internal consistency in the current sample was good for women (α = .87), as well as for men (α = .89).

Body Satisfaction—We assessed body satisfaction with the Body Parts Satisfaction Scale – Revised (BPSS-R[26]), a 15-item measure assessing satisfaction with specific body parts and facial features on a 6-point Likert scale. Items are averaged for a global score; higher scores indicate greater body satisfaction. The BPSS-R has demonstrated good internal consistency, and correlational analyses have supported the construct and concurrent validity of the measure.[26] Current sample internal consistency at baseline was good for women (α = .88) and for men (α = .90).

Eating Disorder Pathology—To measure ED symptoms, we used the Eating Disorder Examination Questionnaire (EDE-Q[27]). The EDE-Q assesses eating attitudes and behaviors over the past 28 days, and higher scores indicate greater pathology. We used the EDE-Q global score to measure overall ED pathology. Past research[28] supports the internal consistency of this measure (α = .92) and test-retest reliability (r = .90). Current sample internal consistency was good for women α = .93 and men α = .90.

Male Body Attitudes—We administered a male-specific body satisfaction measure (i.e., the 29-item Male Body Attitudes Scale (MBAS[29])) to male participants to ensure that we appropriately assessed male body image. The MBAS utilizes a 6-point Likert scale with higher scores indicating greater dissatisfaction. The MBAS has demonstrated high internal consistency as a global score (α = .91–.94) and within its subscales: low fat (α = .93), muscularity (α = .90), and height (α = .81–.88).[29] In the current sample, internal consistency was good for all subscales and the global score (α = .84–.94).

Demographics—Demographic data (e.g., age, gender, race/ethnicity, height, and weight) were collected via self-report.

Analytic Strategy

The initial power analysis was based on body dissatisfaction scores. We estimated change from baseline to post-test scores for body dissatisfaction using the second study in the Stice et al.[30] manuscript, which found a 0.72 score decrease for the active intervention and a 0.12 decrease for the control condition from baseline to post-test. With a sample size of at least 48 total participants, the study should be able to detect a difference between the groups as small as 0.6. Thus all group comparisons in this manuscript should have enough power to detect differences in body dissatisfaction.

We first assessed for possible baseline differences between groups for each dependent variable (negative affect, internalization of appearance ideals, body satisfaction, ED pathology, and male body attitudes in the male sample). No significant differences between groups were found, thus change from baseline was used as the response.

We employed linear mixed effects modeling to accommodate multilevel data (grouping factors, time points, and participants) structures and unevenly spaced longitudinal data (1 week, 2 and 6 months). The baseline responses and the main effects with all two- and three-way interactions of group, time, and gender were automatically included in the model. Model selection using the Akaike Information Criterion (AIC) was determined with age, race, BMI, and university as covariates. No covariate interactions were considered for simplicity. University is the only covariate used in the final models because model with only university consistently had the lowest AIC values.

The comparisons of interest are gender specific, and typical model parameterization cannot easily be used to test these comparisons. Thus, parameterization of the final model used university, baseline response, and only the three-way interaction of group, time, and gender to model each response. This allows for easy construction of linear contrasts using the three-way interaction to get an omnibus test of group difference across time for each gender. When these tests were statistically significant, post-hoc comparisons of the gender specific differences between groups at each time were made using a t-test based on the least squared means. Degrees of freedom of the t-tests using least squared means are based on the total sample size used in the modeling process.

RESULTS

Peer-Leader Adherence

To evaluate PL adherence to the intervention protocol and potential differences in adherence across PLs of different intervention groups, 50% of audio recordings of intervention sessions were reviewed by trained undergraduate RAs who were not PLs themselves. Due to differences in gender make-up of the sessions, raters could not be blinded to intervention group type. To establish interrater reliability, we benchmarked the raters to a master trainer, the first author. Due to documented issues with the Cohen's kappa statistic,[31] we assessed reliability using the Gwet's AC1 statistic.[31] Interrater reliability with the master rater was very high (AC1 = .98). All rated sessions evidenced acceptable adherence to the intervention protocol, with protocol adherence ranging from 93.5% to 100% rated as "fully completed." We evaluated differences in PL adherence between conditions and by site. Results indicated a significant difference in PL protocol adherence by intervention type, suggesting that FO PLs were significantly more adherent than MG PLs (MG: $M = 94.80$, $SD = 1.50$; FO: $M = 97.67$, $SD = 1.68$), $t(6) = 2.54$, $p = 04$. Although this difference was statistically significant, the magnitude of the difference was minimal, as illustrated by the range and average adherence scores. No differences in PL adherence were observed between sites (experienced: $M = 95.08$, $SD = 1.90$; novice: $M = 97.38$, $SD = 1.84$), $t(6) = 1.74$, $p = .13$.

Female Outcomes

Omnibus tests for each response of group difference across time for women (Table 1) suggested no significant differences between groups for PANAS or SATAQ (all ps > .05); however, results did indicate a significant difference between groups for BPSS-R global and EDE-Q global. A further breakdown of these results is shown in Table 2.

After adjusting for university and baseline response effects (Table 2), BPSS-R global score for the WL group was statistically significantly lower than the FO group ($t(176) = -4.45$, $p < 0.0001$) and the MG group ($t(176) = -3.22$, $p = 0.0015$) at post-intervention, indicating greater body dissatisfaction in the WL. These differences were no longer significant at either 2- or 6-month follow-up (all ps > .05), which is contrary to our hypothesis regarding body satisfaction (Table 2).

Female participants in the MG group showed significantly lower EDE-Q scores at post-intervention as compared to WL participants ($t(176) = 3.38$, $p < 0.001$). Participants in the FO group also evidenced significantly lower EDE-Q scores at post-intervention as compared to WL participants ($t(176) = 3.02$, $p = 0.0029$). These results were not maintained over time, as there were no significant differences at 2- or 6-month follow-up for either intervention group relative to WL (all ps > .05). Again, results did not support our hypothesis.

Male Outcomes

Omnibus tests for each response of group difference across time for men (Table 3) indicated significant differences between groups for PANAS, BPSS-R global, and MBAS global, low fat, and muscularity subscales. There were no significant differences between groups for

SATAQ, EDE-Q global, or MBAS height subscale (all *p*s > .05). A further breakdown of these results is shown in Table 4.

Regarding the PANAS, results suggested that male participants in the MG group showed significantly lower negative affect scores ($t(176) = 2.68$, $p = 0.0080$) as compared to WL. There were no significant differences at 2- or 6-month follow-up (all *p*s > .05), which was contrary to our hypothesis.

In support of our hypotheses, BPSS-R global results suggested that men in the MG group reported a significantly greater improvement at post-intervention as compared to WL ($t(176) = -3.57$, $p = 0.0005$). This difference continues to be significant at 2-month follow-up ($t(176) = -2.18$, $p = 0.0308$) and at 6-month follow-up ($t(176) = -2.50$, $p = 0.0134$).

Lastly, only male participants completed the MBAS. On the MBAS low fat subscale, the MG group evidenced significantly lower scores at post-intervention ($t(63) = 2.73$, $p = 0.0082$), 2-month follow-up ($t(63) = 2.10$, $p = 0.0401$), and at 6-month follow-up ($t(63) = 2.37$, $p = 0.0208$) relative to the WL condition, which supported our hypotheses. Regarding the MBAS muscularity subscale, results suggested that the MG group showed significantly lower score at post-intervention ($t(63) = 3.45$, $p = 0.0010$) and 2-month follow-up ($t(63) = 2.37$, $p = 0.0210$), but not at 6-month follow-up ($p > .05$) as compared to WL, thus partially supporting our hypotheses.

Finally, regarding global MBAS scores, results indicated that the MG group reported significantly lower score at post-intervention ($t(63) = 3.63$, $p = 0.0006$) and 2-month follow-up ($t(63) = 2.46$, $p = 0.0167$), but this difference was only marginally significant at 6-month follow-up ($t(63) = 1.95$, $p = 0.0556$) relative to the control condition, which again partially supported our hypotheses regarding male body image.

DISCUSSION

Research increasingly identifies body dissatisfaction as a significant concern in boys/men.[12] Recent feedback from community partners of the *Body Project* also indicates a growing grass roots desire to address body image concerns of men via mixed-gender groups. As such, we sought to address critical research questions associated with extending the *Body Project* to men. First, we compared female participants randomized to the mixed-gender version—*BP4All*, the female-only version—*Body Project,* and a waitlist control condition. Second, we investigated whether men in the MG group reported improvement in relevant domains compared to the WL group.

Results differed markedly between the two genders. Because results for men were more straightforward, we discuss these first. We hypothesized that male students who participated in MG would evidence significant improvement on dependent variables relative to the WL group. For men, results partially supported our hypotheses. Although we did not find significant effects for negative affect, ED pathology, or internalization of appearance ideals, we found significant post-intervention effects for body satisfaction as compared to WL that were sustained at 6-month follow-up. We also found significant changes in two (low body fat and muscularity) out of the three MBAS subscales and the global MBAS that were

sustained at 2- (muscularity) and 6-month follow-up (low fat, global) relative to WL. In summary, this study provides preliminary support for use of the MG *BP4All* in reducing body image concerns in men, which is promising. To our knowledge, this is the first study to show that the *Body Project* can be extended to men with effects lasting out to 6-month follow-up.

With regards to women, we hypothesized that women in both versions of the *Body Project* would benefit relative to waitlist control condition, but that women in the female-only version of the *Body Project* would benefit to a greater degree compared to WL than women in the mixed-gender version. Results did not support our hypotheses and painted a rather difficult picture to interpret. More specifically, although both intervention groups yielded superior results to waitlist for body satisfaction at post-intervention, no differences were retained at 2- or 6-month follow-up. We found no group effects for negative affect or appearance-ideal internalization. For ED pathology, findings were similar with both interventions outperforming WL at post-intervention but not at follow-up. In summary, neither intervention yielded significantly larger effects on the dependent variables at 6-month follow-up relative to WL.

If this were the first ever trial of the *Body Project*, we would be inclined to propose that the *Body Project* is ineffective at reducing body dissatisfaction and other ED risk factors in women. Yet, the results for the FO condition contrast with an extensive literature supporting the female-only version of the *Body Project* in reducing ED risk factors out to 6-month follow-up and beyond (e.g.[2,8–10]), raising several questions about what happened in the present trial. More specifically, we wondered if we failed to implement the *Body Project* correctly in the present trial despite past successful experience. We also considered whether the inclusion of men into the study context somehow reduced effects across both conditions even though men were not present in FO groups. Of note, gender discrepancy in co-educational programming is not a novel finding in the body image literature. Indeed, in their review Yager and colleagues[32] found that co-educational body image programming consistently resulted in improvements for boys, but not for girls. This alone, however, does not explain the contradictory findings in FO in the present trial. Thus, we hypothesized that we might be experiencing unusual reactions of control participants.[33] It is important to note that results in this trial also might represent chance findings. To date, over 40 published and unpublished trials of the *Body Project* have been conducted; chance alone would suggest that some, even if adequately powered, are likely to not be significant.

As a first step to addressing these questions regarding study findings, we sought to understand our results from a descriptive (versus inferential) statistical perspective to see if a consistent pattern of unusual findings emerged in the female-only condition (e.g., unusually large WL response) that explained the non-significant findings. We focused initially on FO since the failure to find effects in this group specifically called into question the degree to which we successfully implemented the *Body Project* in the present trial, given previous findings in the literature. Further, we had planned to benchmark MG findings to FO, and our ability to do this was constrained by our failure to replicate past findings in this condition.

We found that the lack of effects at follow-up for FO relative to WL appeared due to fading intervention effects for body satisfaction, combined with small improvements in WL for the latter variable. For negative affect and appearance-ideal internalization, intervention effects simply never significantly exceeded that of WL. In one case (i.e., ED pathology), however, we found unusually large effects at follow-up for WL (present study $d = .60$) versus previous control groups ($d = .23$[34] and $d = .21$[28]), which partially accounted for our findings. In summary, there was no consistent pattern across variables and therefore this was not likely sufficient in explaining the unusual female outcomes in the present study.

As a second step, we examined whether or not there were university differences in outcomes across all conditions to assess if one site was predominantly responsible for driving the unusual findings. Yet, we did not find that university consistently moderated outcomes, suggesting that neither site primarily drove overall findings, and that the pattern of findings was reasonably consistent across sites. As a third step to understand the results, we examined whether adherence ratings seemed to differ markedly from our previous peer-led trials; once again, we found little evidence of this given that adherence ratings were similarly high for both sites and both conditions. Thus, as a fourth step, we stepped back and examined qualitative impressions of the study and the groups. Here, we found possible explanations for our findings.

Although rarely discussed in published papers, those who use the *Body Project* on a regular basis have long noted that the program seems to engender a degree of perceived social injustice in female participants in FO groups. More specifically, program content highlights societal pressures for women to conform to the thin-ideal, thus eliciting a perception that society oppresses and/or devalues women beyond their appearance, provoking a sense of social injustice. This perspective then appears to generate a political anger toward society and its appearance ideal, which activates participants to further reject the thin-ideal beyond program completion via social activism behaviors. For instance, at the experienced site, months after completion of the *Body Project,* participants began a campaign to ban mixer party themes that promoted sexual objectification and thin-ideal-consistent messages.

Further, within the *Body Project* community, some people have speculated that this political anger might be a critical component underpinning *Body Project* efficacy. To our knowledge, no one has examined this experimentally. Yet, in MG groups and PL trainings, one of the first things we noticed was that the addition of men to the groups largely eliminated this activating state of social injustice, which possibly dampened the magnitude and duration of attitudinal and behavior change in female participants. Instead, groups developed a warmer, supportive, “we are all in this together” type of tone. Thus, one possible explanation for the failure to find lasting effects (with the exception of internalization of appearance ideals) in MG is that the addition of men reduced a critical factor that underpins efficacy of the program. In essence, by eliciting a perspective of social injustice that creates a highly activating state in participants, the FO *Body Project* may result in longer-lasting rejection of the thin-ideal and associated behaviors through resonating anger toward society and urges not to conform to its appearance ideals.

With respect to the MG group, we also speculated that the presence of male students (as both participants and PLs) might have reduced female students' willingness to talk. This in turn would reduce the experience of cognitive dissonance, which is the putative underlying mechanism behind the *Body Project*. Research from educational setting suggests that female students participate in classes less frequently as the percentage of male students increases.[38] Further, research suggests that female collegiate faculty are more likely to reinforce student participation (e.g., praise participation and follow-up on comments) and that voluntary student responses decrease with increased presence of males in classes.[35] It is quite possible that these trends extend to the MG *BP4All* and led to decreased participation by women with both male participants and a male PL present, which would decrease effectiveness of the intervention. Although this explanation does not extend to the FO results and is beyond the scope of the present study to directly investigate, future research might use qualitative methods to investigate these hypotheses via audio recordings of sessions.

In addition, male body image perspectives may have impacted attentional factors within the groups and unintentionally overshadowed those of female participants due to the novelty of this topic.[36] As Davis notes, the disproportionately greater media attention dedicated to male cosmetic surgery and body image concerns in fact minimizes the historical struggle with appearance pressures among women, while simultaneously neglecting more common body image experiences unique to men.[36] Therefore, there may have been a synergistic effect of reduced female participation paired with overshadowing by the novelty of male body image struggles.

Finally, the presence of men may have reduced vicarious dissonance for women. Research indicates that individuals experience vicarious dissonance and change their attitudes when a member of their ingroup displays counterattitudinal behavior.[37,38] Potentially, women do not view men as sufficiently within their ingroup to experience vicarious dissonance when male students reject appearance norms. Hence, female participants may have experienced a diminished perception that fellow ingroup members rejected the female thin-ideal. Previous research on the *Body Project* indicates that group norm changes both preceded changes in ED risk factors and predicted program effectiveness, thus highlighting the role of peers' counterattitudinal behavior producing effects.[39] In summary, fewer female students making anti-thin ideal statements may have watered down effects.

None of the above explanations begins to explain, however, what happened in FO given that men were not physically present. Yet, it is possible that some of these proposed factors in MG groups also contaminated FO groups. We propose that there were two possible sources of diffusion (i.e., contamination) across conditions. First, several of the female PLs ran both MG and FO groups. We did this, in part, because they were very skilled and passionate PLs, and having them run both types of groups reduced the chance for therapist effects (i.e., when very skilled providers contribute to the perception that one intervention is more effective than another[33]). Yet, all PLs who ran both types of groups ultimately expressed a preference for the MG condition and the warmer, collaborative (versus activating) feel; therefore, they may have failed to encourage FO groups to fully embrace the political anger that typically emerges with the *Body Project*. Further, a number of female PLs who ran both types of groups were initially trained in a MG training session. Thus, right from the start, their

experience of the program differed from those PLs in our previous studies; this may have critically altered how they delivered the intervention. Importantly, if this is the case, the change in delivery was not observable based on simple adherence ratings. Instead, they changed something in their implementation that is harder to observe.

The present trial has a number of strengths and limitations. A reasonably large sample size and follow-up period, as well as use of randomized methodology with a waitlist control are all strengths. The present study is also a direct response to community stakeholder feedback, which is a key strength given that we need to be able to tell stakeholders if preference for mixed-gender groups is a good or not so good idea. Lastly, the present study used community providers, which increases external validity. With regards to weaknesses, the previously identified concern regarding diffusion across interventions is a significant limitation. A longer follow-up would significantly improve the present study, as would interviewer assessment of ED symptoms. In addition, this study would have been strengthened by the inclusion of an all-male group.

In summary, the present study provides preliminary evidence that male students benefit from a mixed-gender version of the *Body Project*. The present study did not, however, provide evidence supporting the utility of a mixed-gender version of the *Body Project* for females. Given the unusual results for the female-only condition, results for women should be viewed as tentative and inconclusive. Additional research is needed to address the questions about mixed-gender groups for women raised by the present trial. We argue that further research is urgently needed given the growing interest in a mixed-gender version of the *Body Project* among community partners.

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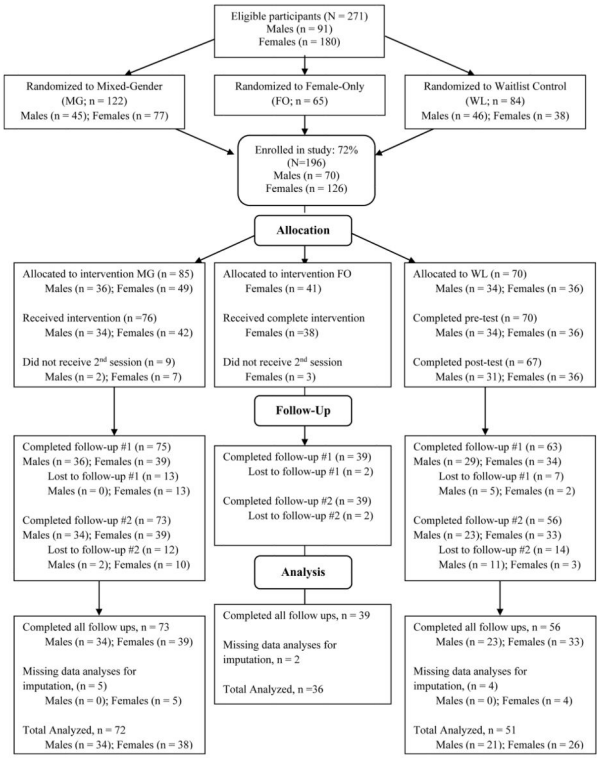

Figure 1.
Consort Diagram of Participant Flow

Table 1

Omnibus tests of differences between groups for female participants

Measure	Numerator DF	*F*	*p* value
PANAS	6	1.61	0.1467
SATAQ	6	1.61	0.1470
BPSS-R	6	3.73	0.0016 *
EDE-Q Global	6	4.73	0.0002 *

Note: PANAS = Positive and Negative Affect Schedule, Negative Affect Subscale; SATAQ = Sociocultural Attitudes Toward Appearance Questionnaire – 4th Edition; BPSS-R = Body Parts Satisfaction Scale – Revised global score; EDE-Q Global = Eating Disorders Examination Questionnaire global score,

* significant at $p < .05$.

Table 2

Least squared means estimates of female responses adjusted for university and baseline scores, and standard errors

Measure	Mean Adjusted for University and Baseline (Std Error)		
	Post-intervention	2-mo follow-up	6-mo follow-up
PANAS†			
Female-Only	1.5 (0.06)	1.50 (0.09)	1.49 (0.08)
Mixed-Gender	1.53 (0.06)	1.58 (0.09)	1.71 (0.08)
Waitlist	1.68 (0.07)	1.53 (0.10)	1.56 (0.09)
SATAQ†			
Female-Only	2.61 (0.07)	2.57 (0.09)	2.52 (0.10)
Mixed-Gender	2.42 (0.06)	2.49 (0.09)	2.40 (0.10)
Waitlist	2.67 (0.07)	2.68 (0.10)	2.74 (0.11)
BPSS-R*			
Female-Only	4.85 (0.10)[a]	4.31 (0.11)[a]	4.29 (0.12)[a]
Mixed-Gender	4.67 (0.09)[a]	4.36 (0.11)[a]	4.28 (0.11)[a]
Waitlist	4.21 (0.11)[b]	4.04 (0.12)[a]	4.07 (0.13)[a]
EDE-Q			
Female-Only	0.91 (0.08)[a]	1.11 (0.11)[a]	0.89 (0.11)[a]
Mixed-Gender	0.87 (0.07)[a]	0.94 (0.11)[a]	1.07 (0.11)[a]
Waitlist	1.24 (0.08)[b]	1.16 (0.13)[a]	0.88 (0.13)[a]

Note: PANAS = Positive and Negative Affect Schedule, Negative Affect Subscale; SATAQ = Sociocultural Attitudes Toward Appearance Questionnaire – 4th Edition; BPSS-R = Body Parts Satisfaction Scale – Revised global score; EDE-Q Global = Eating Disorders Examination Questionnaire global score;

*higher scores indicate greater body satisfaction; different superscript letters indicate significant difference ($p < .05$);

†follow-up comparisons not conducted due to non-significant omnibus test

Table 3

Omnibus tests of differences between groups for all male participants

Measure	Numerator DF	*F*	*p* value
PANAS	3	2.89	0.0371 *
SATAQ	3	1.69	0.1708
BPSS-R	3	4.64	0.0038 *
EDE-Q Global	3	2.41	0.0689
MBAS (LF)	3	3.07	0.0343 *
MBAS (M)	3	4.09	0.0102 *
MBAS (H)	3	2.08	0.1124
MBAS (Glob)	3	4.40	0.0071 *

Note: PANAS = Positive and Negative Affect Schedule, Negative Affect Subscale; SATAQ = Sociocultural Attitudes Toward Appearance Questionnaire – 4th Edition; BPSS-R = Body Parts Satisfaction Scale – Revised global score; EDE-Q Global = Eating Disorders Examination Questionnaire global score; MBAS (LF) = Male Body Attitudes Scale, low fat subscale; MBAS (M) = MBAS muscularity subscale; MBAS (H) = MBAS height subscale; MBAS (Global) = MBAS global score;

* significant at $p < .05$.

Table 4

Least squared means estimates of male responses adjusted for university and baseline scores, and standard errors

Measure	Mean Adjusted for University and Baseline (Std Error)		
	Post-intervention	2-mo follow-up	6-mo follow-up
PANAS			
Mixed-Gender	1.38 (0.07)[a]	1.49 (0.09)[a]	1.41 (0.08)[a]
Waitlist	1.63 (0.07)[b]	1.47 (0.10)[a]	1.52 (0.10)[a]
SATAQ[†]			
Mixed-Gender	2.42 (0.07)	2.51 (0.09)	2.46 (0.10)
Waitlist	2.63 (0.08)	2.65 (0.10)	2.71 (0.12)
BPSS-R[*]			
Mixed-Gender	4.70 (0.10)[a]	4.54 (0.12)[a]	4.60 (0.12)[a]
Waitlist	4.18 (0.11)[b]	4.17 (0.13)[b]	4.13 (0.14)[b]
EDE-Q[†]			
Mixed-Gender	0.72 (0.08)	0.76 (0.12)	0.80 (0.12)
Waitlist	1.02 (0.09)	0.98 (0.13)	1.06 (0.14)
MBAS (LF)			
Mixed-Gender	2.07 (0.11)[a]	2.14 (0.12)[a]	2.17 (0.13)[a]
Waitlist	2.46 (0.11)[b]	2.51 (0.14)[b]	2.63 (0.15)[b]
MBAS (M)			
Mixed-Gender	2.32 (0.12)[a]	2.46 (0.14)[a]	2.44 (0.15)[a]
Waitlist	2.88 (0.13)[b]	2.91 (0.15)[b]	2.76 (0.17)[a]
MBAS (H)[†]			
Mixed-Gender	2.18 (0.16)	2.57 (0.18)	2.56 (0.14)
Waitlist	2.69 (0.17)	2.83 (0.20)	2.43 (0.17)
MBAS (Glob)			
Mixed-Gender	2.23 (0.11)[a]	2.37 (0.12)[a]	2.38 (0.13)[a]
Waitlist	2.74 (0.11)[b]	2.79 (0.14)[b]	2.75 (0.15)[b]

Note: PANAS = Positive and Negative Affect Schedule, Negative Affect Subscale; SATAQ = Sociocultural Attitudes Toward Appearance Questionnaire – 4th Edition; BPSS-R = Body Parts Satisfaction Scale – Revised global score; EDE-Q Global = Eating Disorders Examination Questionnaire global score; MBAS (LF) = Male Body Attitudes Scale, low fat subscale; MBAS (M) = MBAS muscularity subscale; MBAS (H) = MBAS height subscale; MBAS (Global) = MBAS global score;

[*] higher scores indicate greater body satisfaction; different superscript letters indicate significant difference ($p < .05$);

[†] follow-up comparisons not conducted due to non-significant omnibus test