

Peer-Facilitated Eating Disorder Prevention: A Randomized Effectiveness Trial of Cognitive Dissonance and Media Advocacy

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The authors investigated the effectiveness of 2 interventions in reducing eating disorder risk factors under naturalistic conditions in sororities. On the basis of previous research, the campus sororities chose to implement a semimandatory, 2-session eating disorder prevention program to all new sorority members ($N = 90$) during sorority orientation. To facilitate evaluation, sororities agreed to random assignment of new members to either a cognitive dissonance or a media advocacy intervention. Undergraduate peer facilitators ran the groups. Although both interventions had an effect, cognitive dissonance generally was superior at 8-month follow-up. Results further support the utility of cognitive dissonance in reducing eating disorder risk factors and suggest that nondoctoral-level leaders can deliver the program. Results also indicate that a semimandatory format does not reduce effectiveness.

Keywords: eating disorders, prevention, cognitive dissonance, media advocacy, sorority

Eating disorders (EDs) represent a significant problem for college campuses. Although full-syndrome EDs occur rarely, subsyndromal EDs are relatively common in college women (Kurth, Krahn, Nairn, & Drewnowski, 1995; Mintz & Betz, 1988). Moreover, many students with eating pathology doubt that their symptoms warrant treatment and do not pursue therapy (A. E. Becker, Franko, Nussbaum, & Herzog, 2004; Meyer, 2005). Given the difficulty of treatment and the substantial medical and psychological complications that co-occur with EDs (Wilson, Becker, & Heffernan, 2002), efforts to prevent EDs appear warranted.

Although early prevention efforts produced few positive results (Pearson, Goldklang, & Striegel-Moore, 2002), promising effects have emerged recently. In particular, research supports the use of cognitive dissonance (CD) in reducing ED risk factors and in preventing the onset of bulimic behaviors (Stice, Shaw, Burton & Wade, 2006). According to dissonance theory, inconsistent cognitions create psychological discomfort, which is resolved when cognitions are altered to restore consistency (Festinger, 1957). CD prevention of EDs is based on the dual pathway model of bulimia nervosa (Stice, 2001). According to this model, internalization of the thin-ideal standard of female beauty leads to body dissatisfaction, which, in turn, results in dietary restraint and negative affect, both of which increase risk for ED behaviors such as binge eating and purging. CD targets thin-ideal internalization by encouraging

participants to speak and act counter to this ideal (Stice, Mazotti, Weibel, & Agras, 2000).

In a series of studies, Stice et al. demonstrated that CD reduced ED risk factors, including thin-ideal internalization, dietary restraint, body dissatisfaction, negative affect, and eating pathology (Stice, Chase, Storer, & Appel, 2001; Stice et al., 2000; Stice, Trost, & Chase, 2003). More recently, in one of the best controlled ED prevention trials to date, Stice et al. (2006) randomized 481 high-risk adolescent girls to CD, a healthy weight intervention, an expressive writing placebo, or an assessment-only group. Results indicated that CD significantly reduced internalization, body dissatisfaction, dieting, and negative affect compared with control conditions. CD also produced greater reductions in bulimic symptoms than either control condition and resulted in lower onset of binge eating and obesity.

Other labs also have succeeded in implementing CD. For example, Matussek, Wendt, and Wiseman (2004) compared one session of CD with healthy weight management and a wait list control in college women with body image concerns. Both interventions resulted in improvement in thin-ideal internalization, body image, and eating behaviors.

Our lab conducted two studies aimed at establishing the effectiveness of CD in college women. The pilot study ($N = 24$) targeted high-risk sorority members (C. B. Becker, Jilka, & Polvere, 2002) and compared two sessions of CD with a media advocacy (MA) intervention. MA content was similar to that of CD but replaced dissonance activities (e.g., role plays) with videos targeting the role of the media in the maintenance of the thin ideal. We designed MA to tease apart the content of CD from the active, dissonance components. Both CD and MA reduced restraint, eating pathology, and body dissatisfaction. CD also resulted in decreased thin-ideal internalization and yielded a greater reduction in dissatisfaction compared with MA.

The second trial targeted both higher and lower risk sorority members (C. B. Becker, Smith, & Cio, 2005). Sorority volunteers

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Parts of this article were presented at the International Conference on Eating Disorders, Montreal, Quebec, Canada, April 2005. We are grateful to Jennifer Bell, Laura Hemberger, Amanda Franco, Adele Cauble, Stephanie Bull, Marcella Leung, and the Trinity University sororities for their assistance in this study.

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($N = 149$) were randomized to CD, MA, or a wait list control. Results showed that both CD and MA reduced body dissatisfaction, restraint, and overall ED pathology at 1-month follow-up. Both lower and higher risk members also benefited from both CD and MA. Only CD, however, reduced internalization compared with the wait list condition.

Although the results from the previous trials are promising, questions remain regarding the effectiveness of CD in preventing EDs, particularly on college campuses under naturalistic conditions. Thus, the purpose of this study is to move further along the efficacy–effectiveness continuum by investigating four issues. First, it is important to determine whether CD is effective when implemented in the universal, semimandatory format that universities often prefer. This question is particularly relevant for a dissonance intervention given that mandatory participation may reduce the dissonance produced by CD. In particular, participants might reduce dissonance by noting that they are speaking against the thin ideal because they are required to do so through mandatory participation rather than by decreasing investment in the thin ideal. Second, it remains unclear to what degree efficacious interventions, such as CD, can be incorporated into existing social systems in a manner that will be viable over a significant time period. A third concern relates to the testing of such social system-based programs. Many of the priorities of such systems (e.g., required participation, low desire for control groups) clash with the demands of empirical methodology (e.g., randomized assignment, voluntary participation), which makes it difficult to assess programs adapted to particular social systems. A final question pertains to the feasibility of implementing CD on a moderately large scale under naturalistic conditions, which include the use of natural providers (e.g., health educators or peer facilitators). For example, Stice et al. (2000, 2001, 2003, 2006) implemented most groups using doctoral-level psychologists or doctoral-level graduate students. It is critical, however, to determine whether CD, which is moderately challenging to deliver, can be successfully implemented by natural providers. It also is important to determine whether an intervention that is less challenging to implement, such as MA, might prove superior when delivered by natural providers.

In this study, we examined the effectiveness of CD and MA when they were integrated into an existing social system event (i.e., sorority new member orientation); implemented on a universal, semimandatory basis; and delivered by natural providers (i.e., peer facilitators). This study differs from C. B. Becker et al. (2005) in that the interventions were semimandatory and delivered by peer facilitators (i.e., vs. a psychologist with undergraduate coleaders). We also eliminated the wait list control for pragmatic reasons (i.e., sororities were unwilling to support randomization to a wait list group as part of new member orientation).

Whereas CD is moderately difficult to implement, MA requires less skill given the reliance on video recordings. Thus, although we hypothesized that both interventions would significantly reduce restraint, body dissatisfaction, and eating pathology, we hypothesized that MA would do so to a greater degree than CD when delivered by peer facilitators. On the basis of our previous studies, however, in which MA failed to significantly reduce thin-ideal internalization, we hypothesized that only CD would significantly reduce internalization. We also hypothesized that effect sizes would be lower in this study compared

with C. B. Becker et al. (2005; MA effect size range $d = 0.28–0.39$; CD effect size range $d = 0.31–0.40$), because we used both peer facilitators (as opposed to a licensed doctoral-level provider) and semimandatory participation.

Method

Participants

New sorority members of the six campus sororities¹ ($N = 90$) of a private, liberal arts university participated in this study. Most students were freshman or sophomore students. The mean age was 18.66 ($SD = 0.62$), and the mean body mass index, calculated from self-report weight and height, was 22.28 ($SD = 2.39$), which is in the normal adult weight range. A body mass index of 18.5 to 24.9 is considered healthy. Seventy-eight percent of the sample was Caucasian, 9% was Hispanic, 6% was Asian, and 1% was African American. Six percent of the sample did not respond to this question. The ethnic diversity of the sample is comparable to the ethnic diversity of the university where the study was conducted.

Procedure

Overview and Participant Flow

All new members were required to participate in the intervention groups unless they were excused by a sorority officer. Because it is unethical to semimandate participation in a study, the study was separated from the program. Hereafter, the study is referred to as *the study* and the program is referred to as the *Sorority Body Image Program* (SBIP). Study participation consisted of voluntary completion of baseline and follow-up measures. Both the study and the SBIP were approved by Student Affairs. The study also was approved by the university institutional review board.

Of the 108 women who accepted new member offers, 7 did not pursue membership, and 1 deferred orientation. Ten women were granted excused absences for various reasons (e.g., orchestra practice). Of the remaining 90 women, 100% agreed to participate in the study.

New members were randomly assigned into MA or CD. The sororities coordinated their orientations around the SBIP, which was delivered to new members simultaneously in 12 groups (6 MA and 6 CD). Members from different sororities were mixed in the individual groups. To ensure equal representation of all sororities in each of the 12 groups, undergraduate research assistants (RAs) stratified participants by sorority before randomizing members to 1 of the 12 groups. Because the RAs knew many of the participants, they assigned members to the 12 groups prior to randomly assigning the groups to condition to reduce selection bias.

SBIP

At the start of the SBIP, new members were led to a lecture hall by a sorority officer and then oriented to the program en masse. Orientation included the history and rationale of the SBIP along with orientation to the study, which emphasized the optional nature of study participation.

¹ Campus sororities are nonresidential and not affiliated with national sororities. According to the Trinity University Student Affairs Office, the existence of only local and nonresidential sororities is somewhat unusual. Most university Greek systems, however, are quite unique. To our knowledge, there are no data regarding the frequency of local versus national sororities.

Interventions

CD and MA consisted of two 2-hr sessions.² Groups were staffed with three or four unpaid peer facilitators. Most reported participating as facilitators because they believed the program was important.

Following an introduction, during which group members verbally expressed their willingness to participate, all CD and MA groups engaged in a group task of identifying and analyzing the thin ideal. Other common components of the CD and MA interventions included watching a 7-min video highlighting the use of digital enhancement in the media and viewing “before and after” photos that demonstrated the changes in a photo that can be created if one spends \$100 on professional digital editing.

Components unique to CD. The remainder of the first session consisted of members individually writing the costs of pursuing the thin ideal and then discussing as a group these costs and the realistic attainability of the thin ideal. Participants were next given a counterattitudinal homework assignment,³ which consisted of standing in front of the mirror in as little clothing as possible (at home and in private) and noting positive mental, physical, and emotional attributes about themselves.

In the second session, members shared positive attributes from the mirror exercise. Members were then divided into subgroups for a role-play exercise. Facilitators played the following roles: a compulsive exerciser, an herbal weight loss product junkie, or an excessive and unhealthy dieter. Subgroups tried to convince each facilitator to give up pursuit of the thin ideal. Next, members practiced making statements counter to pursuit of the thin ideal and created a top-10 list of strategies for resisting the thin ideal. Finally, they chose a take-home self-affirmation exercise (e.g., making a pact with a friend to stop negative body talk).

Components unique to MA. The remainder of Session 1 consisted of members watching a video of the portrayal of women in advertisements. Discussions were conducted at designated points during the video. Session 2 started with a discussion of the attainability of the thin ideal. Next, participants discussed ways to resist media messages regarding the thin ideal and the costs of pursuing the thin ideal. Members then viewed an edited video on EDs and body image, which included testimonials from women who had ceased pursuit of the thin ideal. It also demonstrated the long-term effects of EDs. We removed information regarding ED behaviors (e.g., vomiting) to reduce the probability of normalizing such behaviors. After discussing the video, members generated strategies to resist thin-ideal media messages.

The Study

Study participants completed a consent form and a baseline questionnaire packet during orientation. Postintervention measures were administered after Session 2. Follow-up packets were collected 7 weeks and 8 months after the end of the program. Follow-up data were collected at the sororities’ regular meetings.

Peer Facilitators and Facilitator Training

We recruited sorority peer facilitators through informational sessions. Facilitator requirements included sorority membership and having completed either CD or MA during a previous study. We granted exceptions to the second criteria for two sorority leaders to maintain a collaborative relationship with sorority leaders. Prospective facilitators were asked not to participate if they had any active ED concerns. Review of facilitator data collected for a related study suggests that facilitators were free of major body image concerns and eating pathology.

Thirty-eight facilitators completed two 4.5-hr experiential training sessions, one training session for each intervention session. We assigned facilitators to a team consisting of three to four cofacilitators. Each team was assigned to a training group consisting of three teams, which yielded

two CD and two MA training groups and 12 facilitator teams. We planned to train former CD participants as facilitators in CD, and planned to do the same with MA. This was not possible for scheduling reasons. Thus, some MA participants were trained in CD, and vice versa.

During training, facilitator teams administered a slightly abbreviated version of each session once and were participants twice. Thirty minutes of supervision was provided after each team administered the session. Supervision was provided by a licensed doctoral-level psychologist and by four sorority RAs who had previous experience as cofacilitators in the C. B. Becker et al. (2005) study. In sum, each peer facilitator in the present study received supervision specific to her experience running the group, and she heard supervision for two other sessions.

The protocols included suggested amounts of time for each section. We emphasized the importance of balancing being a group leader (e.g., paying attention to group dynamics) and adhering to the protocol and the specified time guidelines. We also highlighted sections that had to be delivered verbatim to maintain standardization versus sections in which facilitators could interject their own style to a greater degree. Sessions during the SBIP were audiotaped so we could assess adherence. Tapes were rated by trained RAs (kappa range = .76–1.00; $M = .82$ on training tapes), who used a measure with specific tasks that facilitators were supposed to complete (e.g., “Asked ‘has this thin-ideal always been the standard of beauty?’” “Discussed origin of the thin-ideal and elicited such sources as media, fashion industry, weight loss industry”). RAs rated each item on a 4-point Likert scale ranging from 0 (*did not complete at all*) to 3 (*fully completed*). With the exception of Session 1 in one CD group, all groups demonstrated acceptable adherence. The lower adherence CD group included a vocal member who was highly invested in the thin ideal. After Session 1, facilitators in this group sought additional supervision. Session 2 for this group evidenced good adherence. Because of the naturalistic nature of the study and because it is realistic to expect undergraduate facilitators to encounter resistant participants in a semimandatory program, we included this group in all analyses.

Measures

Our primary dependent variables were restraint, eating pathology, body dissatisfaction, and thin-ideal internalization. We assessed dietary restraint with the Dutch Restrained Eating Scale (DRES; van Strien, Frijters, van Staverson, Defares, & Deurenberg, 1986), which is a 10-item measure. Participants respond to questions such as “Do you deliberately try to eat foods that are slimming?” on a 5-point Likert scale. Research supports the internal consistency ($\alpha = .95$) and predictive validity of the DRES (Stice & Agras, 1998; van Strien et al., 1986). Internal consistency in the present sample also was good ($\alpha = .95$).

We assessed eating pathology with a composite bulimic scale that we created by summing the diagnostic items (e.g., “Over the past 28 days how many times have you taken laxatives as a means of controlling your shape or weight?”) of the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994). The EDE-Q is a self-report version of the Eating

² We created protocols for both interventions by modifying, with permission, an unpublished four-session CD protocol developed by Stice and Presnell (2004).

³ The inclusion of both higher and lower risk participants raises the question of whether lower risk participants experience dissonance during the mirror exercise and whether it is truly counterattitudinal. Review of audiotaped sessions, however, indicated that virtually all participants reported finding this task unusual and, to some degree, difficult, because they all were used to critiquing themselves in the mirror. This included participants who reported being able to say positive things about themselves in other contexts.

Disorders Examination (EDE; Fairburn & Cooper, 1993), a semistructured interview considered to be the gold standard in the assessment of EDs. We did not use the EDE in this study because all members of the research team were either fellow students or a professor who might know the participants. Thus, we relied on self-report to protect participants' confidentiality. The EDE-Q assesses eating behaviors and attitudes over 1 month. Research supports the 2-week test-retest reliability, internal consistency, and temporal stability of the EDE-Q (Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beumont, 2004). The EDE-Q Bulimic scale provides a self-report comparison with the EDE bulimic composite used by Stice et al. (2006). The bulimic composite had adequate internal consistency ($\alpha = .69$) at baseline.

We assessed thin-ideal internalization using the Ideal-Body Stereotype Scale—Revised (IBSS-R; Stice, Ziemba, Margolis, & Flick, 1996), which is a 10-item measure. Participants respond to statements such as "Thin women are more attractive" on a 5-point Likert scale. The IBSS-R has acceptable test-retest reliability ($r = .63$; Stice, 2001) and good internal consistency ($\alpha = .89$; Stice & Agras, 1998). Internal consistency was also good in this sample ($\alpha = .91$).

We used the Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) to assess body dissatisfaction. Participants complete 34 items that ask such questions as "Have you felt ashamed of your body?" Responses from a 6-point Likert scale are summed. Research indicates that BSQ scores differ for ED patients compared with nonpatients and that scores correlate with scores from the Eating Attitudes Test (Cooper et al., 1987). The latter finding provides some evidence of concurrent validity. Other research also supports the concurrent validity and test-retest reliability in a U.S. sample (Rosen, Jones, Ramirez, & Waxman, 1996). In the present sample, internal consistency was good ($\alpha = .97$).

Results

This study investigates prevention of EDs, not treatment. Thus, we excluded members who met criteria for an ED on the basis of EDE-Q responses to diagnostic items. The EDE-Q has been used to identify likely ED cases (e.g., C. B. Becker et al., 2005; Hulley & Hill, 2001). Six likely cases were randomized to CD, and four were randomized to MA. Although this difference was not signif-

icant, we excluded these cases from analyses, which yielded a final sample of 80 participants.

One-way analysis of variance (ANOVA) revealed no significant differences between CD and MA in age or body mass index. One-way ANOVAs also indicated no significant baseline differences on dependent variables. Despite this, we used repeated measures ANOVAs to control for possible dependent variable baseline differences. Eighty-nine percent of analyzed CD participants (i.e., 34 of 38) and 88% (37 of 42) of analyzed MA participants completed the 7-week follow-up, and 74% (28 of 38) and 69% (29 of 42) completed the 8-month follow-up. We conducted analyses as intent to treat by carrying forward the last scores for participants who did not complete follow-ups. Baseline analyses comparing participants who did and did not complete follow-up yielded no significant differences.

Table 1 shows dependent variable means by group and assessment period. To facilitate comparison with our earlier study, we include intent-to-treat Cohen's effect size for each group from baseline to 7-week and 8-month follow-ups. We conducted 2×4 (Group \times Time) repeated measure ANOVAs to examine differences between the groups over time on each of the dependent variables. We used eta-squared values for effect sizes. We conducted follow-up paired t tests (one-tailed) between baseline and each postintervention assessment to determine significant within-group changes from baseline (see Table 1). These latter analyses should not be used to infer differences between groups beyond those evidenced by the repeated measure ANOVAs.

Dietary Restraint (DRES)

The ANOVA for the DRES yielded a time effect, $F(1, 78) = 6.92$, $p = .01$, $\eta^2 = .08$, and a Group \times Time interaction, $F(1, 78) = 5.86$, $p = .02$, $\eta^2 = .07$. There was no group effect, $F(1, 78) = 0.00$, $p = .99$, $\eta^2 = .00$. CD differed significantly over time

Table 1
Means and Standard Deviations for Dependent Measures and Body Mass Index

Measure	Baseline		Posttest		7-week follow-up		8-month follow-up		7-week follow-up <i>d</i>	8-month follow-up <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Restraining										
DRES CD _a	2.57	0.91	2.35***	0.90	2.34***	0.87	2.29**	0.89	.26	.31
DRES MA _b	2.41	0.85	2.29*	0.92	2.40	0.91	2.45	0.92	.01	-.03
Eating pathology										
Bulimic CD _a	18.54	13.53	14.38**	12.69	13.73***	13.01	12.54***	13.66	.36	.44
Bulimic MA _a	17.68	12.81	13.69**	11.54	13.91**	11.59	13.21**	12.58	.31	.35
Internalize										
IBSS-R CD _a	3.61	0.56	3.19****	0.93	3.23**	0.93	3.08**	1.10	.50	.61
IBSS-R MA _b	3.41	0.72	3.25**	0.78	3.39	0.72	3.30	0.83	.03	.14
Body Dissatisfaction										
BSQ CD _a	87.17	33.16	80.10***	28.46	75.74***	30.58	75.31***	32.47	.36	.36
BSQ MA _b	85.15	29.00	75.92****	27.72	78.32	27.36	81.31	33.40	.24	.12

Note. Cognitive dissonance CD $n = 38$, media advocacy MA $n = 42$. All analyses are intent to treat. Groups with different subscripts were statistically significantly different over time $p < .05$. Within-group differences comparing baseline with posttreatment and follow-ups with paired t test are indicated by asterisks. DRES = Dutch Restrained Eating Scale; Bulimic = Eating Disorder Examination Questionnaire Bulimic composite; Internalize = thin-ideal internalization; IBSS-R = Ideal-Body Stereotype Scale—Revised; BSQ = Body Shape Questionnaire.

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

compared with MA. CD evidenced a small to moderate effect at 8 months ($d = .31$) versus no effect in MA ($d = -.03$).

Eating Pathology (EDE-Q Bulimic Composite)

The ANOVA for the EDE-Q bulimic composite produced a time effect, $F(1, 72) = 13.30, p = .0001, \eta^2 = .16$. There was no group effect, $F(1, 72) = 0.02, p = .88, \eta^2 = .00$, or interaction, $F(1, 72) = 0.32, p = .58, \eta^2 = .00$. Both groups significantly improved on bulimic pathology, with small to moderate effect sizes at the 8-month follow-up (MA, $d = 0.35$; CD, $d = 0.44$).

Thin-Ideal Internalization (IBSS-R)

The IBSS-R ANOVA yielded a time effect, $F(1, 70) = 9.64, p = .003, \eta^2 = .11$, and an interaction, $F(1, 70) = 5.50, p = .02, \eta^2 = .06$. There was no group effect, $F(1, 70) = 0.11, p = .74, \eta^2 = .00$. At the 8-month follow-up, CD produced a moderate to large within-group effect ($d = .61$). In contrast, MA produced a very small effect ($d = .14$).

Body Dissatisfaction (BSQ)

For the BSQ, we found a time effect, $F(1, 77) = 9.28, p = .003, \eta^2 = .10$, and an interaction, $F(1, 77) = 3.91, p = .05, \eta^2 = .04$, but no group effect, $F(1, 77) = 0.00, p = .98, \eta^2 = .00$. The 8-month effect for CD was small to moderate ($d = .36$), and the effect was very small for MA ($d = .12$).

Discussion

This study investigates the effectiveness of two ED prevention interventions when they were incorporated into an existing social system, implemented on a semimandatory basis, and delivered by undergraduate peer facilitators. Results for CD are promising. Peer-facilitated CD resulted in 8-month reductions in restraint, eating pathology, thin-ideal internalization, and body dissatisfaction. These findings provide additional support for the effectiveness of CD.

The results also suggest that CD can be implemented by natural providers, such as peer facilitators. Contrary to our hypothesis that this study would produce lower effect sizes, 8-month within-group effect sizes ($d = 0.31$ – 0.61) were comparable to the effect sizes found at 1 month in our previous study (C. B. Becker et al., 2005; $d = 0.31$ – 0.40). Although CD is not an overly challenging intervention for doctoral-level providers, delivering it competently requires some skill. Thus, we were pleased to find that undergraduates were able to implement the intervention with reasonably intensive training.

We were also pleased to find positive results given the semimandatory format. Although a recent meta-analysis suggested that targeted prevention produces larger effects (Stice & Shaw, 2004), it often is not viable to selectively target high-risk students. With one exception (i.e., C. B. Becker et al., 2005), previous studies of CD recruited high-risk volunteer samples. Yet, if CD is to be broadly disseminated, researchers must recognize that university officials often want to include both low- and high-risk students through required attendance (e.g., mandatory seminar on student drinking) because of the logistical difficulties of identifying high-

risk students. In this study, many participants reported entering the program reluctantly, and most participated in SBIP because they did not believe they had a choice. Thus, it is promising to see lasting improvement in CD participants given that a semimandatory format (a) tends to appeal to university decision makers yet (b) had the potential to disrupt a dissonance-based intervention.

As Levine and Piran (1999) noted, most prevention research, including most CD research, has targeted individuals by attempting to create change in the individual, not in a larger social system. Yet prevention efforts with individuals may be more effective when accompanied by simultaneous efforts to engage social systems that influence individuals (Levine & Piran, 1999). Engagement of social systems also may facilitate long-term implementation of programs, because social systems may use significant resources to maintain useful programs. The present study provides a useful replication of our previous studies and further supports the viability of incorporating CD into a relevant social system, namely a sorority system.

In contrast to our hypotheses, MA performed relatively poorly. Within-group effect sizes indicate minimal change in restraint, internalization, and body dissatisfaction at 8 months, and MA did not outperform CD. MA did, however, result in sustained reductions in bulimic pathology at follow-up. This is important given that the bulimic composite score corresponds to the most pathological behaviors (i.e., binge eating, purging). The relatively poor performance of MA may indicate that the active dissonance activities are an important component of CD in maintaining gains over time. The results also suggest that the ease of implementing MA did not confer it a significant advantage over CD, even with peer facilitators.

This study has a number of limitations, many of which are commonly associated with effectiveness studies. Assessment was limited to self report, and we were unable to include a no-treatment control group for comparison. The use of an 8-month follow-up is an improvement on our previous studies, but a longer follow-up would be better, as would a larger, more diverse sample. Finally, although we believe that spillover effects between the two interventions are minimal, this is a possible confound. Anecdotal information suggests that sorority members have a tendency to discuss the common elements of both programs (i.e., the information) and have minimal awareness of the differences between the two groups. Nonetheless, the risk of spillover in a study such as the present one cannot be completely discounted.

In sum, the present study provides additional support for the effectiveness of CD when delivered in a semimandatory format, which appeals to many social systems. Results also suggest that CD may be an effective prevention program that could be of use at other universities, particularly given the finding that CD can be adequately delivered by peer facilitators. The present study needs replication, however, both in sorority systems and in other social systems.

References

- Becker, A. E., Franko, D. L., Nussbaum, K., & Herzog, D. B. (2004). Secondary prevention of eating disorders: The impact of education, screening, and referral in a college-based screening program. *International Journal of Eating Disorders, 36*, 157–162.

- Becker, C. B., Jilka, K., & Polvere, L. (2002, November). *Cognitive dissonance vs. media psychoeducation: A pilot study of eating disorder prevention in sorority members*. Paper presented at the annual convention of the Association for Advancement of Behavior Therapy, Reno, NV.
- Becker, C. B., Smith, L. M., & Cio, A. C. (2005). Reducing eating disorder risk factors in sorority members: A randomized trial. *Behavior Therapy, 36*, 245–254.
- Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). The development and validation of the body shape questionnaire. *International Journal of Eating Disorders, 6*, 485–494.
- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders, 16*, 363–370.
- Fairburn, C. G., & Cooper, Z. (1993). The Eating Disorder Examination (12th ed.). In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment* (pp. 317–360). New York: Guilford Press.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Hulley, A. J., & Hill, A. J. (2001). Eating disorders and health in elite women distance runners. *International Journal of Eating Disorders, 30*, 312–317.
- Kurth, C. L., Krahn, D. D., Nairn, K., & Drewnowski, A. (1995). The severity of dieting and bingeing behaviors in college women: Interview validation of survey data. *Journal of Psychiatric Research, 29*, 211–225.
- Levine, M. P., & Piran, N. (1999). Reflections, conclusions, and future directions. In N. Piran, M. P. Levine, & C. Steiner-Adair (Eds.), *Preventing eating disorders: A handbook of interventions and special challenges* (pp. 319–330). Philadelphia: Brunner/Mazel.
- Luce, K. H., & Crowther, J. H. (1999). The reliability of the Eating Disorder Examination—Self-Report Questionnaire Version (EDE-Q). *International Journal of Eating Disorders, 25*, 349–351.
- Matusek, J. A., Wendt, S. J., & Wiseman, C. V. (2004). Dissonance thin-ideal and didactic healthy behavior eating disorders prevention programs: Results from a controlled trial. *International Journal of Eating Disorders, 36*, 376–388.
- Meyer, D. F. (2005). Psychological correlates of help seeking for eating-disorder symptoms in female college students. *Journal of College Counseling, 8*(1), 20–30.
- Mintz, L. B., & Betz, N. E. (1988). Prevalence and correlates of eating disordered behaviors among undergraduate women. *Journal of Counseling Psychology, 35*, 463–471.
- Mond, J. M., Hay, P. J., Rodgers, B., Owen, C., & Beumont, P. J. V. (2004). Temporal stability of the Eating Disorder Examination Questionnaire. *International Journal of Eating Disorders, 36*, 195–203.
- Pearson, J., Goldklang, D., & Striegel-Moore, R. H. (2002). Prevention of eating disorders: Challenges and opportunities. *International Journal of Eating Disorders, 31*, 233–239.
- Rosen, J. C., Jones, A., Ramirez, E., & Waxman, S. (1996). Body Shape Questionnaire: Studies of validity and reliability. *International Journal of Eating Disorders, 20*, 315–319.
- Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: Mediating effects of dieting and negative affect. *Journal of Abnormal Psychology, 110*, 124–135.
- Stice, E., & Agras, W. S. (1998). Predicting onset and cessation bulimic behaviors during adolescence: A longitudinal grouping analysis. *Behavior Therapy, 29*, 257–276.
- Stice, E., Chase, A., Stormer, S., & Appel, A. (2001). A randomized trial of a dissonance-based eating disorder prevention program. *International Journal of Eating Disorders, 29*, 247–262.
- Stice, E., Mazotti, L., Weibel, D., & Agras, W. S. (2000). Dissonance prevention program decreases thin-ideal internalization, body dissatisfaction, dieting, negative affect, and bulimic symptoms: A preliminary experiment. *International Journal of Eating Disorders, 27*, 206–217.
- Stice, E., & Presnell, K. (2004). *Cognitive dissonance intervention manual*. Unpublished manuscript, University of Texas at Austin.
- Stice, E., & Shaw, H. (2004). Eating disorder prevention programs: A meta-analytic review. *Psychological Bulletin, 130*, 206–227.
- Stice, E., Shaw, H., Burton, E., & Wade, E. (2006). Dissonance and healthy weight eating disorders prevention programs: A randomized efficacy trial. *Journal of Consulting and Clinical Psychology, 74*, 263–275.
- Stice, E., Trost, A., & Chase, A. (2003). Healthy weight control and dissonance-based eating disorder prevention programs: Results from a controlled trial. *International Journal of Eating Disorders, 33*, 10–21.
- Stice, E., Ziemba, C., Margolis, J., & Flick, P. (1996). The dual pathway model differentiates bulimics, subclinical bulimics, and controls: Testing the continuity hypothesis. *Behavior Therapy, 27*, 531–549.
- van Strien, T., Frijters, J. E., van Staveren, W. A., Defares, P. B., & Deurenberg, P. (1986). The predictive validity of the Dutch Restrained Eating Scale. *International Journal of Eating Disorders, 5*, 747–755.
- Wilson, G. T., Becker, C. B., & Heffernan, K. (2002). Eating disorders. In E. J. Mash & A. R. Barkley (Eds.), *Child psychopathology* (2nd ed., pp. 687–715). New York: Guilford Press.

Received November 29, 2005

Revision received May 17, 2006

Accepted June 4, 2006 ■