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Reducing Eating Disorder Risk Factors Among Gay College-Aged Males: A Randomized Efficacy Trial

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FLORIDA STATE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES

REDUCING EATING DISORDER RISK FACTORS AMONG
GAY COLLEGE-AGED MALES: A RANDOMIZED EFFICACY TRIAL

By

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ABSTRACT

Research supports that gay males may be at increased risk for eating disorders compared to heterosexual males, establishing a need to develop and empirically evaluate programs to reduce risk for this population. The present study investigated the feasibility, acceptability, efficacy, and specificity of a cognitive dissonance-based (DB) intervention (The PRIDE Body Project[®]) in reducing eating disorder risk factors among gay males in a university-based setting. Eighty-seven gay males were randomized to either a 2-session DB intervention (n=47) or a waitlist control condition (n=40). Participants completed validated measures assessing eating disorder risk factors pre-intervention, post-intervention, and at 1-month follow-up, along with post-treatment acceptability measures. Hierarchical Linear Modeling was used to assess differences between conditions across time. Regarding feasibility and acceptability, a total of 36 gay men participated in Session 1 of the program and 86% were retained at Session 2. Acceptability ratings for the program were highly favorable for all items. Regarding efficacy, the DB condition was associated with significantly greater decreases in body dissatisfaction, drive for thinness and muscularity, body-ideal internalization, dietary restraint, bulimic symptoms, negative affect, and self- and partner-objectification compared to waitlist control from pre- to post-intervention. Improvements in the DB group were maintained for all variables at 1-month follow-up, with the exception of body-ideal internalization. Demonstrating the specificity of the intervention to problems targeted within the DB program, conditions did not differ over time on changes in social pressures to conform to the body-ideal or alcohol use problems. Supporting the posited mechanism of treatment effects, body-ideal internalization mediated treatment effects on bulimic symptoms. Additionally, men who had higher baseline eating pathology or lower gay community involvement reported greater and more long-lasting treatment effects, respectively. Results support the feasibility, acceptability, efficacy, and specificity of The PRIDE Body Project[®], up to one-month post-intervention and provide support for models of eating pathology in gay men.

CHAPTER ONE

INTRODUCTION

Eating disorders represent a significant public health problem for which efficacious, disseminable treatments largely remain unknown, particularly for males (Keel, 2005). Previous research has demonstrated that gay males are vastly overrepresented in treatment-seeking samples of men with eating disorders (Herzog, Norman, Gordon, & PePOSE, 1984) and have higher rates of body dissatisfaction and eating pathology than heterosexual males (Russell & Keel, 2002). Increased risk may be due, in part, to heightened emphasis on physical appearance within the gay male subculture and increased pressure to be lean to attract male partners (Siever, 1994). Several studies have demonstrated the salience of a youthful, thin, muscular body-ideal among gay males (Martins, Tiggemann, & Kirkbride, 2007; Yelland & Tiggemann, 2003) and that gay males place greater emphasis on appearance when seeking a partner compared to heterosexual men (Epel, Spanakos, Kasl-Godley, & Brownell, 1996). Despite this strong body of research demonstrating that gay men represent a high-risk group, to our knowledge, no studies have developed interventions aimed at this population. Because weight/shape concerns represent the most potent and consistent risk factor for developing eating disorders in males and females (Stice, 2002), challenging the thin, muscular body-ideal may be important for reducing eating disorder risk in gay males. A burgeoning line of research has demonstrated the efficacy and disseminability of cognitive dissonance-based (DB) prevention programs for eating disorders. These programs challenge internalization of the thin-ideal to decrease the likelihood of developing an eating disorder in high-risk females (Stice, Shaw, & Marti, 2007). Consistent with cognitive dissonance theory, engaging participants to actively contradict unhealthy ideals is key to the intervention's success (Festinger, 1957). Given identified risk factors among gay males, reviewed below, a DB program to promote a healthy body image may be particularly beneficial in reducing risk in gay males. Thus, the present study

examined the efficacy of an adapted DB eating disorder prevention program developed to target specific risk factors in gay males.

1.1 Eating Pathology in Gay Males

Eating disorders are pernicious and chronic disorders with lifetime prevalence estimates of up to 3% of the male population (Hudson, Hiripi, Pope, & Kessler, 2007). As many as 42% of men seeking treatment for an eating disorder self-identify as homosexual or bisexual (Carlat, Camargo, & Herzog, 1997; Herzog, et al., 1984; Olivardia, Pope, Mangweth, & Hudson, 1995), suggesting that bisexual and gay men are overrepresented in treatment-seeking samples relative to their presence in the general population (4.2%; Reece et al., 2010). Similarly, among community-based samples of men, being bisexual or gay has been consistently associated with higher drive for thinness (Martins, et al., 2007; Siever, 1994), body dissatisfaction (Beren, Hayden, Wilfley, & Grilo, 1996; Silberstein, Mishkind, Striegel-Moore, Timko, & Rodin, 1989), and higher levels of disordered eating and eating disorders (Boisvert & Harrell, 2009; Carlat, Camargo, & Herzog, 1997; French, Story, Remafedi, Resnick, & Blum, 1996), suggesting that findings in clinical samples are not an artifact of treatment seeking. In contrast, research in women indicates that homosexuality seems to be neither a risk nor a protective factor for eating disorder development (Morrison, Morrison, & Sager, 2004). Therefore, homosexuality has been shown to be a consistent and unique risk factor for disordered eating in men.

1.1.1 Theoretical Explanations for Increased Risk among Gay Men

One sociocultural explanation for gay males' high-risk status stems from objectification theory (Fredrickson & Roberts, 1997). Originally applied to explain eating disorder risk among women, objectification theory states that females are socialized to view their physical appearance from an observer's perspective, as a sexual object. This objectification leads women to engage in constant body monitoring and body comparison. In a culture that idealizes thinness, body monitoring and comparison leads to body dissatisfaction and increased risk for eating disorders. Seeking a male partner is one factor that plays a role in this objectification, as

studies have found that men place a stronger emphasis on physical appearance (i.e. thinness and attractiveness) when looking for a romantic partner than do women (Legenbauer et al., 2009; Silberstein, et al., 1989; Tiggemann, Martins, & Kirkbride, 2007; Yelland & Tiggemann, 2003). One prediction that would stem from this theory is that single women would be at increased risk compared to married women, and previous research has demonstrated this effect (Keel, Baxter, Heatherton, & Joiner, 2007). Thus, sociocultural pressures to be thin to attract a male partner appear to play an important role in eating pathology among heterosexual women.

Given that both heterosexual females and gay males are interested in attracting male partners, recent conceptualizations have used objectification theory to explain why gay males are at increased risk for eating pathology. One theory, developed by Siever (1994), posited that gay males are at increased risk for eating pathology due to heightened emphasis on physical appearance within the general gay male subculture and specifically from males they are trying to attract as romantic partners. According to Siever's theory, *predominant* interest in attracting a male romantic partner would place an individual at increased risk for eating pathology, as individuals who are primarily interested in attracting a male romantic partner would still be most subject to the cultural pressures to conform to the physical ideal that men find attractive.

Among gay males, objectification may be even more complex than for heterosexual women, given that gay men are not only the subject of objectification, but also the executors of objectification of other males (termed the gay male "gaze"; Wood, 2004). This dual process of objectification may lead gay men to engage in regular body comparison and evaluation with other gay males. Given that gay males are both the subject and the object of the gay male "gaze," body comparisons among gay males may be more frequent and problematic than those among heterosexual women. Indeed, the very process of objectifying other gay men may elicit this appearance comparison dynamic and lead the onlooker to feel that his current weight and shape are inadequate (Wood, 2004).

This objectification is compounded by an increasing focus on an unrealistic body-ideal for all men, but especially for gay men. This ultra-lean, muscular ideal has become exaggerated over time for all men, as evidenced by increasing muscle mass among models in Playgirl (Leit, Pope, & Gray, 2001) and unrealistically muscular male action figures (Pope, Olivardia, Gruber, & Borowiecki, 1999) over the last thirty years. Further, with increasing weight in all segments of the United States population, the incredibly low body fat percentage and extreme muscle definition incorporated within this ideal has become progressively more unattainable and can rarely be achieved without extreme diet, exercise, or steroid use (Cafri et al., 2005; Pope et al., 1999; Spitzer, Henderson, & Zivian, 1999). And among gay men, these cultural pressures and aesthetic ideals appear to be much more salient than for heterosexual men, as there is a notably heightened emphasis on an ultra-lean, muscular, and youthful ideal (herein referred to as the mesomorphic-ideal) within the gay male subculture (Siever, 1994; Tiggemann, et al., 2007; Wood, 2004; Yelland & Tiggemann, 2003).

The mesomorphic-ideal may serve several purposes within the gay male community. While the ideal serves as a reflection of physical attractiveness, the muscularity aspect of the ideal may serve as a marker of men's physical health, which has important implications for attracting potential partners (Wood, 2004). Similar to evolutionary explanations that a youthful, voluptuous female figure shows potential mates that a woman has strong genetic fitness (Feingold, 1990), a youthful, lean, muscular ideal figure among gay males may signal fitness and suitability to potential mates. Gay males seeking male partners would not benefit from any reproductive advantages associated with physical attractiveness. However, physical health is particularly important among the gay male subculture, where AIDS stigmatization represents a growing concern (Wood, 2004). Thus, the mesomorphic-ideal may be a way that gay men can appear disease free to potential partners.

The lean, mesomorphic-ideal appears to be influenced not only by pressures specific within the bisexual and gay community, but also to larger social pressures to conform to

traditional cultural views of their identity as males (Wood, 2004). In a broader context, the mesomorphic-ideal represents a lean variation of the culturally accepted ideals that equate muscularity with masculinity, and a potential way for gay males to both appeal to the gay male subculture and conform to broader cultural pressures associated with the male gender role. Indeed, there are negative cultural consequences for boys and men who do not conform to the masculine gender role (Connell, 1987), including stigmatizing and teasing (Beren et al., 1996). As being a gay male can already elicit cultural discrimination and stigmatization, conforming to the mesomorphic-ideal may represent a strategy to decrease further stigmatization and aid in more closely resembling the masculine aesthetic. Thus, the gay male ideal appears to be dually influenced by both cultural ideals among the gay male subculture, as well as the by traditional pressures to which all men are subjected.

1.1.2 Specific Risk Factors for Eating Pathology among Gay Men

Consistent with theoretical explanations for increased eating disorder risk among BG men as compared to heterosexual men, Tylka and Andorka (2012) have found support for an expanded tripartite influence model of eating pathology (Thompson, Covert, & Stormer, 1999) for gay men. The model posits that several areas of social influence (partner pressure, gay community involvement, media pressure, family pressure, and friend pressure) lead to internalization of the mesomorphic ideal and appearance comparison, which lead to dual body image pathways of body change behaviors. Specifically, internalization of the mesomorphic ideal leads to both dissatisfaction with muscularity and dissatisfaction with body fat, which in turn lead to muscularity enhancement behaviors and disordered eating behaviors, respectively. Overall, the constructs included in the model explained a sizable amount of variance in eating pathology among gay men (41.2% of the variance in muscle dissatisfaction, 67.4% of the variance in body fat dissatisfaction, 33.5% of the variance in muscularity enhancing behaviors, and 47.7% of the variance in disordered eating behaviors). While this dual body image pathway model is similar to models previously researched among heterosexual men (Tylka, 2011), the

link between muscularity dissatisfaction and body dissatisfaction appears stronger among gay men as opposed to straight men (Tylka & Andorka, 2012). For both heterosexual (Tylka, 2011) and gay men (Tylka & Andorka, 2012), muscularity dissatisfaction significantly predicted muscularity enhancement behaviors (heterosexual men: $\beta = .20$; gay men: $\beta = .51$), and body fat dissatisfaction predicted disordered eating behaviors. However, only among gay men did dissatisfaction with muscularity predict dissatisfaction with body fat, body fat dissatisfaction predict muscularity enhancement behaviors, and muscularity enhancement behaviors predict disordered eating behaviors. Thus, muscularity enhancement and disordered eating behaviors appear more robustly associated among gay males compared with straight males.

This model highlights important sociocultural eating disorder risk factors that are specific to or more pronounced in gay males, with important implications for intervention. Namely, pressures from partners, involvement in the gay community, media, family, and friends all appear to play an important role in the development of eating pathology for gay men. Different from previous models in predominantly heterosexual men, pressure from potential or previous partners to conform to the mesomorphic-ideal has an impact on eating pathology among gay males. As previously mentioned, gay males have increased pressure from potential partners to be lean and muscular, given that males place a strong emphasis on physical attractiveness when evaluating potential partners (Feingold, 1990; Legenbauer et al., 2009; Siever, 1994). Consistent with (potential) partner pressure to be muscular, Tylka and Andorka (2012) found that pressure from potential or previous partners to be muscular led to internalization of the mesomorphic-ideal and increased muscularity enhancement behaviors among gay men. Consistent with pressure to be lean to attract a male partner, Brown and Keel (2012) found that single bisexual and gay males had increased restrictive disordered eating attitudes and behaviors compared to bisexual and gay males in a relationship and all heterosexual males. Further, among men in relationships, low relationship satisfaction was associated with increased bulimic symptoms among bisexual and gay, but not heterosexual, men. Thus, males who are

unsatisfied in their current relationship are also at risk for increased disordered eating. These results highlight the role that the immediate romantic environment may play in eating pathology for sexual minority males and point to an important potential content area for intervention.

Involvement in the gay community also impacts eating pathology for gay males by increasing the volume and salience of pressures to conform to body-shape ideals within that community (Siever, 1994; Tylka & Andorka, 2012; Wood, 2004). Affiliation with the gay community has been associated with increased body dissatisfaction (Beren, et al., 1996) and muscularity enhancement behaviors (Tylka & Andorka, 2012) among gay males, and it appears that this pathway is at least partially mediated by internalization of the mesomorphic-ideal and appearance comparison (Tylka & Andorka, 2012). Although involvement in the gay community can provide emotional support and acceptance for gay males within an often culturally discriminant society, it can also contribute to increased eating pathology if that involvement reinforces the importance of attaining and maintaining the mesomorphic-ideal.

Several studies have supported the salience of media influence on body image concerns for males, including gay males (Drummond, 2005; Duggan & McCreary, 2004; Taylor & Goodfriend, 2008; Tylka & Andorka, 2012; Wood, 2004). Studies examining images in *Playgirl* (Leit et al., 2001) and male action figures (e.g. GI Joe®; Pope, et al., 1999) over the last several decades have demonstrated the increased emphasis on muscularity in media images for men regardless of orientation. Yet, the impact of these media images on body dissatisfaction appears to be exacerbated for gay men. Gay men have been found to view a higher volume of pornographic material than heterosexual men and similar volumes of fitness magazines; however, viewing fitness magazines and pornographic material was related to greater social physique anxiety among gay, but not heterosexual, males (Duggan & McCreary, 2004). This may be a consequence of greater appearance comparison among gay males or greater internalization of these media images. Regarding appearance comparison, pornographic material for gay men provides multiple opportunities for appearance comparisons between the

individual's physique and that of the actors. Regarding internalization, adolescent sexual minority males report trying to look like media images to a greater degree than heterosexual males (Austin et al., 2004). Further, perception of media influence on attitudes towards appearance has been shown to mediate the relationship between sexual orientation and both drive for thinness and appearance anxiety among gay males (Carper, Negy, & Tantleff-Dunn, 2010). Thus, compelling evidence supports that media plays a strong role in body image concerns among gay males, potentially through increasing internalization of the mesomorphic-ideal and increasing the volume of available appearance comparisons.

In addition to media images, pressures from family members and peers may also contribute to eating pathology in gay males. Tylka and Andorka (2012) found that familial pressures may be stronger for muscle-related dissatisfaction and behaviors than for those related to drive for thinness. This may be due, in part, to parents with a strict gender role orientation placing greater pressures on their effeminate sons to achieve a muscular body type in order to reduce social stereotypes directed at their gay child (Herek & Glunt, 1995; Wood, 2004). Alternatively, gay males may experience indirect pressures to conform to a muscular ideal from paternal modeling behaviors. Thus, parental influence may play a role in eating pathology among gay males, particularly related to muscularity enhancing attitudes and behaviors.

In regards to peer pressures, a substantial body of literature has supported the impact of peer influence on eating pathology among gay males. As children, gay males reported being teased more often than heterosexual males about their weight and reported greater distress related to weight-specific teasing (Beren, et al., 1996). Other studies have found that gay men perceived their friends as placing a greater emphasis on physical attractiveness than did heterosexual men (Hospers & Jansen, 2005; Yelland & Tiggemann, 2003) and that this perceived peer pressure was associated with body dissatisfaction to a greater degree among gay men compared to heterosexual men (Hospers & Jansen, 2005). Further, peers within the

gay male community represent potential partners. Given the impact that pressures from potential partners play in eating pathology for gay males, this makes peer pressures particularly salient for this group.

Consistent with objectification theory, sociocultural pressures to conform to the mesomorphic-ideal within the gay male subculture lead gay men to internalize this ideal and engage in body comparison. Several studies have found that gay men place a greater emphasis on physical attractiveness in their own self-evaluation than do heterosexual men (Beren et al., 1996; Siever, 1994; Silberstein et al., 1989). Epel and colleagues (1996) found that gay men were more concerned with body shape and weight and had a thinner ideal for potential partners than heterosexual men as described in personal ads. Homosexual men also advertised their own weight to prospective partners in 70% of ads, which was significantly more often than heterosexual men (29%), heterosexual women (13.5%), or lesbian women (10%). Thus, it may be that the heightened emphasis on physical appearance in the gay male subculture leads gay men to over-emphasize appearance in their own self-evaluation, leading to greater body dissatisfaction when actual physiques inevitably differ from ideal physiques, which contributes to increased disordered eating.

The central role that internalization of the mesomorphic-ideal plays in eating pathology among gay males is similar to the role that thin-ideal internalization plays among women. Previous research has found that thin-ideal internalization is a potent causal risk factor for eating pathology among females (Thompson & Stice, 2001). Further, thin-ideal internalization among women has been a major target for intervention studies seeking to reduce eating pathology among females (Stice & Shaw, 2004). Given similar mechanisms among females and gay males, examining which programs have been successful at reducing eating disorder risk factors among females may inform potential avenues for intervention among gay males.

1.2 Eating Disorder Prevention

1.2.1 Prevention among Females

Substantial efforts have been invested in developing eating disorder prevention programs for females; however, until recently, few programs had consistent and favorable results. Early eating disorder prevention programs focused primarily on didactic psychoeducational components that were universally applied to large groups of adolescents, independent of risk for eating pathology (Stice & Shaw, 2004). These studies often failed to find significant results, consistent with research demonstrating that psychoeducation alone is typically not potent enough to facilitate behavior change (Larimer & Crouse, 2002). Since then, the field has progressed towards more targeted interventions aimed at selected populations of high-risk individuals, with a focus on reducing modifiable risk factors that have been shown to predict the onset of eating pathology, including: dietary restraint, body dissatisfaction, thin-ideal internalization, and negative affect (Stice & Shaw, 2004).

Meta analytic studies have provided insight into why early interventions were unsuccessful and highlight important components of successful interventions (Stice & Shaw, 2004; Stice, Shaw, et al., 2007). Specifically, selected programs, or programs targeting individuals that belong to a group that is at increased risk, have produced larger effects than universal programs. This may be a consequence of increased commitment and motivation to participate in the program content for individuals who are at high risk, as well as having greater room for improvement than available in low risk participants. Further, interventions including participants over the age of 15 had larger effects than those with participants younger than 15, perhaps due to age functioning as an indirect measure of risk status (Keel, Fulkerson, & Leon, 1997) and lower insight into cognitive risk factors for young participants, which may limit the efficacy of interventions (Stice & Shaw, 2004). Programs that included only females had larger effects than those that included both males and females; however, this effect was observed for only two of the six outcome variables (body dissatisfaction and dieting) (Stice, Shaw, et al.,

2007). Further, the males in these studies were likely to be predominantly heterosexual and thus, at lower risk, as sexual orientation was not a selection factor for these studies. Larger effects were also observed when interventions were facilitated by trained interventionists, as opposed to endogenous providers (e.g. school teachers). This may reflect increased time pressures on endogenous providers, which would limit opportunities for training and supervision and contribute to low rates of compliance with manualized interventions observed among endogenous providers (Keel, 2005). Finally, regarding content, programs that were interactive and contained DB components had larger effect sizes for decreasing thin-ideal internalization, body dissatisfaction, dieting, negative affect, and eating pathology than those that did not include these elements (Stice, Shaw, et al., 2007).

DB interventions have become one of the more innovative and promising classes of eating disorder prevention programs. These programs incorporate cognitive dissonance theory from the domain of social psychology. Cognitive dissonance theory asserts that when people behave in a way that contradicts their beliefs, they will experience psychological discomfort, which will lead them to alter their beliefs to be more compatible with their behavior and to restore consistency (Festinger, 1957). Thus, when participants are encouraged to behave in ways that are incongruent with their original attitude (a counter-attitudinal stance), this generates dissonance, leading them to alter their original stance to be more congruent with their behavior (Leippe & Eisenstadt, 1994). Recent interventions have used DB principles to target high-risk groups for eating pathology to actively challenge cultural pressures to be thin. Within these interventions, individuals participate in a series of verbal, behavioral, and written activities that critique the thin-ideal, leading to dissonance induction and observed reductions in thin-ideal internalization and body dissatisfaction. The interventions also utilize a group format, which is ideal for maximizing publicity, a factor robustly associated with inducing cognitive dissonance (Baumeister & Tice, 1984; Festinger & Carlsmith, 1959; Leippe & Eisenstadt, 1994). When an individual argues publicly for a point of view (versus privately), they are more likely to change

their beliefs to be consistent with their behavior, as publicity increases the individual's accountability (Baumeister & Tice, 1984). Further, these programs incorporate several of the components that have been associated with larger effect sizes in the previously mentioned meta-analyses. The group discussions and verbal, behavioral, and written activities are highly interactive, which increases effort expenditure, another important factor for dissonance induction and for attitudinal and behavioral change in the psychotherapeutic context (Cooper, 1980).

DB interventions have demonstrated greater reductions in eating disorder risk factors including dietary restraint, body dissatisfaction, bulimic eating pathology, and negative affect among high-risk females compared to assessment-only controls post-treatment (Becker, Smith, & Ciao, 2005; Stice, Mazotti, Weibel, & Agras, 2000; Stice, Shaw, Burton, & Wade, 2006; Stice, Trost, & Chase, 2003), with effects persisting through 1-month (Becker et al., 2005; Stice et al., 2000) and 6-month follow-up (Stice et al., 2006; Stice et al., 2003). Further, statistically significant differences between conditions on thin-ideal internalization, dieting, and eating pathology symptoms were observed at 1-year follow-up (Stice et al., 2006). Thus, compared to no intervention, DB interventions demonstrate efficacy that is relatively enduring. Supporting that dissonance induction is responsible for reductions in pathology, a high dissonance version of the intervention that maximized public denouncement of the thin-ideal, had a high level of effort expenditure, and reinforced the perception that participation was voluntary, resulted in greater decreases in eating disorder risk factors than a low dissonance version (Green, Scott, Diyankova, & Gasser, 2005). Finally, consistent with the theoretical premise of DB interventions, mediation analyses have demonstrated that thin-ideal internalization mediates treatment effects (Stice, Presnell, Gau, & Shaw, 2007).

Studies comparing DB interventions to a more passive, educational media advocacy intervention have demonstrated the efficacy of DB interventions relative to alternative treatments (Becker et al., 2005; Becker, Smith, & Ciao, 2006). One study found that the DB intervention produced statistically greater differences compared to media advocacy over 7-week

and 8-month follow-up on dietary restraint, thin-ideal internalization, and body dissatisfaction (Becker et al., 2006). Although another study failed to find differences between DB and media advocacy (Becker, Bull, Schaumberg, Cauble, & Franco, 2008), these null findings may have been a consequence of initial risk status moderating the effect of treatment condition. Within an already high-risk population, Becker et al. (2008) found that the DB intervention resulted in equivalent decreases in dietary restraint, thin-ideal internalization, body dissatisfaction, and bulimic symptoms for both lower and higher risk individuals. In contrast, within the media advocacy condition, higher risk participants demonstrated significantly greater decreases in dietary restraint, body dissatisfaction, and bulimic symptoms as compared to the lower risk participants. Thus, DB interventions appear to have more consistent results for a broader spectrum of individuals ranging from low to high risk, as compared to an intervention that does not use DB techniques.

1.2.2 The Participatory Research Approach and Peer Co-Leaders: Implications for Efficacy and Dissemination

Recent work by Becker and colleagues (Becker et al., 2008; Becker et al., 2006; Becker et al., 2010) has successfully implemented DB programs with women in sororities, using a participatory research approach (Becker et al., 2005). The participatory research approach engages community partners in collaborative decision-making through building on community strengths and resources to help improve problem solving (Becker, Stice, Shaw, & Woda, 2009). This approach has worked well among sororities, given their organizational structure and their strong potential for influence among college females. Through this approach, sorority members had an active role in contributing to the program design through tailoring the DB intervention content to target the values and language of the community (Becker et al., 2009). The success of the initial program led to further development, expansion, and refinement based on feedback from sorority members who had completed the program. An important component of these more recent interventions has been the use of peer co-leaders within the DB intervention framework

(Becker et al., 2008; Becker et al., 2006). Peer co-leaders were initially implemented due to lack of sufficient clinical providers and were recruited among members who had previously participated in the program. Consistent with the participatory approach, the use of peer leaders also coincided with the values of leadership, community service, and sisterhood prominent within sorority culture (Becker, et al., 2009).

The addition of peer co-leaders provided several advantages over the use of non-peer facilitators only. First, according to Festinger (1957), social comparisons may be most powerful for those who are viewed as being similar to the self. Thus, positive modeling from peer co-leaders, as opposed to non-peer leaders, may increase the salience and relevance of the social comparison. Specific to the present intervention, the use of peer co-leaders capitalizes on the importance of enduring peer influence on eating behaviors among college-aged students (Crandall, 1988; Keel, Forney, Brown, & Heatherton, 2012) which may extend to gay males (Tylka & Andorka, 2012). Utilizing peer co-leaders who model healthy attitudes and behaviors towards eating appear to capitalize upon these observed peer-modeling effects on eating behaviors (Keel et al., 2012). Second, peer co-leaders may enhance the credibility of an intervention, by helping bridge the gap between participants and facilitators, the latter of whom may differ on important demographic characteristics. Third, since training peer leaders only takes modest amounts of time and resources, the use of peer co-leaders provides further opportunities for dissemination of interventions once efficacy has been established.

1.3 The Present Study

Despite the strong theoretical literature on why gay males are at risk for disordered eating, they have been largely overlooked in research studies on prevention and treatment. Indeed, no studies to date have developed interventions aimed at this high-risk group. Given that the mesomorphic ideal and appearance comparison play a central role in eating pathology among gay males, this group may benefit from a cognitive DB intervention that challenges cultural pressures to pursue the gay male body-ideal (Brown & Keel, 2012; Tylka & Andorka,

2012). DB interventions are also ideally suited to target internalization of several areas of sociocultural pressures to be thin and muscular (peers/friends, family, media) and can be adapted to address internalization of additional sociocultural influences specific to gay males (influence from the gay community and [potential] partners). Importantly, the theory behind why DB programs are successful is that they target internalization of sociocultural pressures to conform to the body-ideal. The DB program *does not* change the existence of social pressures from others, but rather how participants internalize and respond to these social pressures as individuals. Thus, the program should not impact the actual social pressures to conform to the body-ideal (peers, family, media, gay community, and [potential] partners). Given the success of group-based interventions with organizations such as sororities (Becker et al., 2005), working with groups of gay men in the context of the local gay community may be helpful in understanding the social context in which these pressures may develop and be perpetuated.

Thus, the aim of the present study was to determine the feasibility, acceptability, efficacy, and specificity of adapting a cognitive DB intervention for use among gay college-aged males. Regarding feasibility and acceptability it was hypothesized that: (1a) up to 30 gay males would be successfully recruited to participate in the DB intervention; and (1b) that 75% would complete the intervention and that acceptability ratings would be favorable for all items (scores greater than 5 on a 7-point scale). Regarding efficacy, it was hypothesized that: (2a) men in the DB group would show significantly greater reductions in all eating disorder-related outcome measures (body dissatisfaction, drive for thinness and muscularity, body-ideal internalization, dietary restraint, bulimic symptoms, negative affect, and self- and partner-objectification) over time compared to men in the waitlist control (WL) group; and (2b) differences between groups would be maintained at 4-week follow-up. Finally regarding specificity of the intervention, it was hypothesized that (3) significant intervention effects would be specific to eating disorder risk variables targeted within the program. Specifically, it was hypothesized that intervention effects should not extend to (3a) social pressures from others to pursue the body-ideal, which was not

targeted in the program, and (3b) alcohol use problems, another area of psychopathology elevated among gay men (Grant et al., 2004).

Although the present study was underpowered to examine potential mediators and moderators of treatment outcome, exploratory analyses were pursued to examine the following exploratory hypotheses: (4) reductions in eating pathology (i.e. bulimic symptoms) over time would be mediated by decreases in body-ideal internalization; and (5) treatment outcome would be moderated by severity of baseline eating disorder risk and involvement in the gay community. Specifically, it was hypothesized that differences between the DB and WL conditions would be greatest in individuals with low levels of initial pathology. This is consistent with results from Becker and colleagues (2008), demonstrating that high-risk individuals improved in both DB and media advocacy conditions, but that those in the low-risk group only improved in the DB condition. These results may be further explained by regression to the mean, as eating pathology for high-risk participants, regardless of condition, will likely decrease over time, and eating pathology for low-risk participants will likely increase over time. Thus, regression to the mean may mask potential differences between conditions for high-risk participants. In contrast, involvement in the gay community may increase investment in the body-ideal (Tylka & Andorka, 2012) and increase the potency of an intervention offered within a group context of shared values that challenges this ideal, resulting in greater differences between the DB and WL conditions in those with higher community involvement.

CHAPTER TWO

METHODS

2.1 Participants

Participants (n=87) were recruited through advertisements around the campus and local community for participation in a positive body image program for gay men, through introductory psychology classes at Florida State University (FSU), and through an e-mail distributed to men enrolled at FSU. Given increased risk for eating pathology among gay males, our design represented a selected prevention in which participants met the following inclusion criteria: (a) male, (b) at least 18 years of age, (c) were more attracted to men than women, (d) did not meet criteria for a DSM-5 eating disorder, and (e) agreed to participate in the body image program. All participants were provided with a list of community resources for appropriate mental health treatment at the time that they terminated the study. In addition, all participants randomized to the WL condition were offered the opportunity to participate in the DB intervention after completing follow-up assessments. Of the 31 waitlist participants who completed the study, 7 were interested in participating in the intervention and 5 participated in the intervention. Results from these participants were not included in analyses to avoid bias due to self-selection factors.

2.2 Procedure

All study procedures were approved by the Florida State University Institutional Review Board (IRB).

2.2.1 Eligibility Phone Screen

Interested participants completed an eligibility phone screen. The phone screen obtained information regarding sexual identity, sexual behaviors, and sexual attractions over the past year, and included the eating disorders module of the Structured Clinical Interview for Axis-I Disorders (SCID-I; First, 1995). During administration of the SCID-I eating disorders module, criteria were amended to be consistent with DSM-5 eating disorder diagnoses. Phone screens were used to confirm that participants met the sexual orientation criteria and did not have a

current DSM-5 eating disorder (anorexia nervosa, bulimia nervosa, or binge eating disorder). Eligible and interested participants were sent a link to the online consent form. Ineligible participants were thanked for their time and were offered the list of community resources.

2.2.2 Overview and Study Flow

After completing consent online, participants were randomly assigned to either the DB group intervention (n=47) or a WL condition (n=40) (see Figure 1). Participants completed baseline measures assessing demographics, lesbian, gay, bisexual, transgender (LGBT) community involvement, and eating disorder and other risk factors. All questionnaires were identified by an identification number only to protect confidentiality.

The two 2-hour intervention sessions were separated by one week. Intervention groups included between 4-7 members each and took place at the FSU Psychology Clinic, or conference rooms in the Psychology Department Building. Groups were led by the investigator, a masters level clinician with previous experience leading treatment groups for clinical populations, and one undergraduate co-leader who was a gay male peer. A total of four different peer co-leaders led groups throughout the course of the study. Comparison of outcomes across group leaders revealed no significant differences (all p -values $>.11$). Peer co-leaders were undergraduate research assistants recruited through university advertisements for assistance with a positive body image program for gay males. Previous research using the participatory research approach emphasizes the importance of having peer co-leaders with whom participants in the intervention can identify in order to maximize and facilitate behavior and attitudinal change (Becker et al., 2009).

Baseline measures were repeated for both conditions immediately post-intervention/after a one-week interval and 4-weeks post-intervention/after a 5-week interval, to assess immediate and longer-term effects (see Figure 1). Participants had the option of receiving monetary compensation for completing assessments (DB condition n=33; 91.67%; Control condition n=35; 97.22%) or receiving course credit for participation (DB condition n=3; 8.33%; Control

condition $n = 1$; 2.78%). There was no significant difference between conditions on form of compensation ($\chi^2(1) = 1.16, p = .28$). Paid participants received up to \$20 for assessment completion, prorated for degree of completion (Baseline = \$5, Post-Intervention = \$5, 4-week Follow-Up = \$10). Participants who selected course credit received prorated credits based on rate of completion (Baseline = 2.5 credits, Post-Intervention = 2.5 credits, 4-week Follow-Up = .5 credits).

2.2.3 Dissonance-Based Intervention

The intervention for the present study, *The PRIDE Body Project*[®] (Brown & Keel, 2013; see Appendices, for copies of the facilitator manual and program workbook, respectively), was adapted from a two-session DB intervention used by Becker and colleagues (2005) to address risk factors specific to gay males. Consistent with the participatory research approach, drafts of the adapted intervention materials were submitted to members ($N = 6$) of the gay male community to elicit feedback on the relevancy and applicability of the intervention and associated exercises. To ensure adequate response and to increase the representativeness of feedback, comments were elicited from gay men in their undergraduate ($n = 3$) or post-graduate studies ($n = 1$) at Florida State University, as well as leaders of an international advocacy group for eating disorders among men ($n = 2$).

In Session 1, participants: (a) defined the “ideal” body type within the gay community; the “ideal” was determined separately by each group to allow for possible heterogeneity in the definition of the “ideal” among subgroups of gay men, (b) discussed the origin and perpetuation of the “ideal,” (c) brainstormed the costs of pursuing the “ideal,” (d) participated in a verbal challenge during which they countered the thin, muscular-ideal message, and (e) were asked to complete three homework assignments (a letter to an adolescent boy, a behavioral challenge, and a mirror exposure assignment). In Session 2, participants: (a) reviewed homework, (b) engaged in role plays to counter/discourage pursuit of the “ideal,” (c) discussed ways to challenge and avoid negative “body talk” statements, (d) listed ways to resist the pressure to

pursue this ideal both individually and as a group within the gay community (termed “body activism”), (e) discussed barriers to body activism and how to overcome those barriers, and (f) individually selected an exit exercise to continue actively challenging the body-ideal.

2.2.4 Investigator and Peer-co-leader Training

The investigator, her major advisor, and first peer co-leader completed an 8-hour training session, led by Carolyn Becker, PhD, the developer of the original DB intervention from which *The PRIDE Body Project*® was adapted. In addition to providing training to become peer co-leaders of the intervention, the workshop provided training to provide supervision for peer leaders – a train the trainer session for the investigator and her major advisor. Peer co-leaders received additional training on the adapted intervention for BG men by the investigator. Additional peer co-leaders, who joined the project after the training by Dr. Becker was completed, underwent a three-fold training process. First, they listened to audiotaped sessions of at least two previous groups. Second, they participated in a group and completed all associated exercises. And finally, these peer-co-leaders underwent two 3-hour training sessions on the DB-intervention, including an overview of the program and active practice running a mock-group with other peer-facilitators or volunteers and the investigator.

2.2.5 Measures

2.2.5.1 Demographics. All participants completed an initial questionnaire that included demographic information: sexual orientation, age, ethnicity, current involvement in psychotherapy, and information about relationship status and satisfaction, as the latter have been associated with risk for eating pathology among gay men (Brown & Keel, 2012).

2.2.5.1.1 Sexual Orientation. Sexual orientation was assessed through three items adapted from the Sell Assessment (1996) (with wording adapted from Klein, Sepekoff, & Wolf, 1985 for clarity) assessing: (1) sexual identity, (2) sexual behaviors, and (3) sexual attractions. These items represent three important constructs in assessing sexual orientation (Laumann, Michael, & Gagnon, 1994). All items were assessed dimensionally on an 8-point scale from

exclusively homosexual (or “exclusively attracted to men”) to exclusively heterosexual (or “exclusively attracted to women”). Additionally, all items included an option for asexuality (e.g., “I have had no sexual attractions during the past year”). Of the three assessment items, sexual attraction has been found to be the most important in assessing sexual orientation (Sell, 1996). Given this, and that objectification theory posits that interest in obtaining a male partner drives increased risk for eating pathology for gay men, we used the attraction item to determine eligibility. Although bisexual men are also at increased risk for eating disorders (Carlat, et al., 1997), it was important to determine that the program was efficacious in a more homogenous group of gay men. Thus, bisexual men (men who are equally attracted to men and women) were excluded from the present study. Importantly, variability exists among gay men in their sexual attractions to other men. To properly capture this variability, eligible participants could endorse being attracted to men across a spectrum, including being attracted: (1) exclusively to men, (2) mostly to men, or (3) more to men (than women). This is consistent with the theoretical models of increased risk in eating disorders among gay males (Siever, 1994).

2.2.5.2 Treatment Acceptability. Treatment acceptability was assessed, post-intervention, using four self-report items assessing the following: (1) “How helpful did you find this program in promoting a positive body image?” (2) “How helpful did you find this program in improving your own body image?” (3) “How satisfied were you with the overall program?” and (4) “How likely would you be to recommend this program to a friend?” Responses were rated on a 7-point likert-type scale (1 = very unsatisfied/unhelpful/unlikely and 7 = very satisfied/helpful/likely). In addition, an open-ended question, “What improvements would you suggest for the program?” was included to facilitate the participatory approach and to identify possible future changes to the program.

2.2.5.3 Primary Eating Disorder Risk Factor Outcome Measures

2.2.5.3.1 Body Dissatisfaction. Overall body dissatisfaction was assessed through the Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) and the Male

Body Attitudes Scale (MBAS; Tylka, Bergeron, & Schwartz, 2005) assessed dissatisfaction with muscularity and body fat, two important components of the gay male body-ideal.

The BSQ assesses the degree of unhappiness with body appearance on a 6-point Likert-type scale. The BSQ has demonstrated good concurrent and discriminant validity (Cooper et al., 1987). As the BSQ was developed for females, some items were adapted for use with males in accordance with previous studies (Russell & Keel, 2002). This adapted version of the BSQ has been successfully used in previous studies of gay men and has demonstrated high internal consistency (Cronbach's alpha = .96; Russell & Keel, 2002). Internal consistency for the BSQ in the present study ranged from $\alpha=.97-.98$ across assessments and stability for controls from baseline to follow-up was $r=.75$.

The MBAS consists of 24 items on a 6-point scale with response options ranging from 1 (never) to 6 (always) and includes dissatisfaction with body fat and dissatisfaction with muscularity subscales. Previous research has demonstrated strong internal consistency for both the total score and the specific subscales (Smith, Hawkeswood, Bodell, & Joiner, 2011; Tylka et al., 2005). Previous research has demonstrated that the MBAS Body Fat Dissatisfaction subscale (leanness) has been a stronger predictor of disordered eating in gay men than MBAS Muscularity Dissatisfaction (Smith et al., 2011). Given these results and the dual pathways demonstrated for body change behaviors among gay males (Tylka & Andorka, 2012), both the muscularity and body fat subscales were used, and analyzed separately, in the present study. Internal consistency for the MBAS in the present study ranged from $\alpha=.92-.93$ for the Body Fat subscale and from $\alpha=.91-.93$ for the Muscularity subscale. Stability in the control group was high for both subscales ($r=.92$ for the body fat subscale and $r=.85$ for the muscularity subscale).

2.2.5.3.2 Drive for Thinness & Drive for Muscularity. Drive for thinness was assessed through the Eating Disorders Inventory (EDI) Drive for Thinness subscale (Garner, Olmstead, & Polivy, 1983). The Drive for Thinness subscale is a 5-item self-report measure of cognitive and behavioral features common in anorexia nervosa, with 6 response options (1=never to

6=always). Higher subscale scores indicate greater drive for thinness. The EDI is a well-validated measure of eating pathology with research supporting the discriminant validity and internal consistency of the EDI (Nevonen, Clinton, & Norring, 2006). Additionally, the EDI has demonstrated test-retest reliability for individuals both with and without eating disorders (Thiel & Paul, 2006) and factor invariance in men from their 20's to their 40's (Keel et al., 2007). Further, the EDI Drive for Thinness subscale has been successfully utilized in previous studies with bisexual and gay men (Brown & Keel, 2012). Untransformed scores were utilized as recommended for nonclinical populations by Schoemaker, van Strien, and van der Staak (1994). Internal consistency for the EDI Drive for Thinness subscale in the present study ranged from $\alpha=.92-.93$. The stability of the Drive for Thinness subscale within the control group was strong ($r=.84$).

Drive for muscularity was assessed through the Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000). The DMS is a 15-item measure that assesses desire to be more muscular. Participants are asked to rate how each item relates to them on a 6-point scale (1=always, 6=never; reverse scored). Higher scores on the DMS represent greater drive for muscularity. The DMS has demonstrated strong internal consistency in both adolescent (McCreary & Sasse, 2000) and adult males (McCreary, Sasse, Saucier, & Dorsch, 2004). The DMS has demonstrated good construct validity, convergent validity, and discriminant validity in males (McCreary & Sasse, 2000). Further, the DMS and related drive for muscularity measures have been successfully used with gay male populations in previous studies (Duggan & McCreary, 2004; Yelland & Tiggemann, 2003). Internal consistency for the DMS in the present study ranged from $\alpha=.91-.93$, and stability for the control group was $r=.57$.

2.2.5.3.3 Body-Ideal Internalization. Body-ideal Internalization was measured through the Sociocultural Attitudes Towards Appearance Questionnaire-3 for males (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). The SATAQ-3 is a 30-item self-report questionnaire that assesses media and cultural influences on body image, with response

options ranging from 1 (definitely disagree) to 5 (definitely agree). Although the SATAQ-3 was initially developed to assess societal influences on the thin-ideal internalization in females, research has supported the validity of an adapted form for males (Smolak, Levine, & Thompson, 2001). The present study utilized the 8-item Internalization-General subscale of the SATAQ-3, which measures the extent to which participants endorse and accept unrealistic body-ideal images from the media. The internalization-general subscale was used given that it most directly assesses the parallel construct of body-ideal internalization used in previous DB intervention studies; further, previous research has demonstrated stronger psychometric properties (concurrent, incremental validity) of this scale compared to the other subscales of the SATAQ-3 in men (Karazsia & Crowther, 2008). Research has demonstrated strong internal consistency, concurrent validity, and discriminant validity of the SATAQ-3 among males (Karazsia & Crowther, 2008). Internal consistency for the SATAQ Internalization-General subscale in the present study ranged from $\alpha=.95-.96$. Stability for the control group was $r=.61$.

2.2.5.3.4 Dietary Restraint. Dietary restraint was measured through the Restraint subscale of the Eating Disorder Examination-Questionnaire (EDE-Q). The EDE-Q is a self-report questionnaire adapted from the semi-structured Eating Disorders Examination (Fairburn & Cooper, 1993). The EDE-Q assesses pathological eating behaviors and attitudes over the previous 28 days and has demonstrated convergent validity with the EDE interview (Berg, Peterson, Frazier, & Crow, 2011). Research has further supported the internal consistency and two-week test-retest reliability of the EDE-Q (Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beumont, 2004). Further, this method of assessment has been used in previous DB intervention studies (Becker et al., 2008; Becker et al., 2006; Becker et al., 2010), which facilitates comparison of effect sizes for the application of the adapted DB intervention in a new population. Internal consistency for the EDE-Q Restraint subscale in the present study ranged from $\alpha=.80-.87$ and the stability within the control group was $r=.67$.

2.2.5.3.5 Bulimic Symptoms. Bulimic symptoms were assessed through a composite of diagnostic items from the EDE-Q (e.g. frequency of bingeing, and/or purging behaviors, and weight/shape concerns) and the EDI Bulimia subscale (Garner et al., 1983).

The composite from the EDE-Q reflects a self-reported form of the EDE bulimic composite used in previous DB intervention studies (Presnell & Stice, 2003; Stice, Burton, & Shaw, 2004). The original EDE bulimic symptom composite has demonstrated strong internal consistency ($\alpha = .92$), 1-week test-retest reliability ($r = .81$), and sensitivity to detect intervention effects (Presnell & Stice, 2003; Stice et al., 2004; Stice et al., 2006). The EDE-Q bulimic composite has demonstrated adequate internal consistency in previous studies ($\alpha = .69 - .79$; (Becker et al., 2008; Becker et al., 2006). Internal consistency for the EDE-Q bulimic composite in the present study ranged from $\alpha = .72 - .86$. The bulimic composite also demonstrated strong stability within the control group ($r = .94$).

The EDI Bulimia subscale is a 6-item self-report measure of cognitive and behavioral features common in bulimia nervosa, with a primary focus on binge eating and one item devoted to desire to purge. The scale includes six possible response options ranging from 1 (never) to 6 (always), with higher scores indicating greater bulimic symptoms. Evidence of reliability and validity for this measure has been established in studies reported for the EDI Drive for Thinness scale above, and untransformed scores were utilized as recommended for nonclinical populations by Schoemaker, van Strien, and van der Staak (1994). Internal consistency for the EDI Bulimia subscale in the present study ranged from $\alpha = .84 - .87$. The stability within the control group was good ($r = .80$).

2.2.5.3.6 Negative Affect. Negative affect was measured by the Positive Affect and Negative Affect Schedule Revised (PANAS-X; Watson, Clark, & Tellegen, 1988). Respondents rated the extent to which they experienced negative affect over the past week on a 5-point scale with response options from “very slightly or not at all” to “extremely”. Previous research using the PANAS-X has demonstrated the measure’s strong psychometric properties, including good

internal consistency ($\alpha = .95$), convergent validity, and predictive validity for bulimic symptom onset (Stice & Agras, 1998; Watson & Clark, 1994). Further, the PANAS-X has been successfully used to measure fluctuations in state affect (McIntyre, Watson, & Cunningham, 1990), including pre- to post-treatment changes in previous DB intervention studies (Becker, McDaniel, Bull, Powell, & McIntyre, 2012; Becker, et al., 2010; Stice, Chase, Stormer, & Appel, 2001). Internal consistency for the PANAS negative affect subscale in the present study ranged from $\alpha = .88-.91$. Stability for the negative affect subscale for the control group was good ($r = .73$).

2.2.5.3.7 Self- and Partner-Objectification. Self-objectification and potential partner-objectification were measured through the Self-Objectification Questionnaire (SOQ; Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998). The SOQ assesses the degree to which participants view their body in an objectified, appearance-based manner versus a non-objectified, competence-based manner. Participants rank 10 body-attributes (5 appearance-based and 5 competence-based) in order of importance to them. Items were also adapted to assess objectification of potential partners, consistent with previous studies (Strelan & Hargreaves, 2005). Scores were calculated as the difference between the sum of competence and appearance rankings. The possible scores range from -25 to 25, with positive scores indicating a greater emphasis on appearance and higher objectification. In contrast, negative scores reflect a greater emphasis on competence-based attributes. The SOQ has demonstrated convergent validity with other related measures of body preoccupation (Noll & Fredrickson, 1998). Additionally, the SOQ has been shown to be uncorrelated with BMI (Calogero, Davis, & Thompson, 2005) and obesity (Fredrickson et al., 1998), suggesting that the measure taps into preoccupation with appearance, regardless of body size. Stability for the control group was good for both the SOQ Self ($r = .73$) and SOQ Other subscales ($r = .72$).

2.2.5.4 Measures Evaluating Intervention Specificity

2.2.5.4.1 Social Pressures to Conform to the Body-Ideal. Sociocultural pressures to conform to the body-ideal were measured by the Perceived Sociocultural Pressures Scale

(PSPS; Stice, Ziemba, Margolis, & Flick, 1996, as adapted by Tylka & Andorka, 2012). The original PSPS includes 8 items, rated on a 5-point scale (never to always), to assess pressures to be thin from family, friends, dating partners, and the media. The adapted version that assesses muscularity pressures altered items by substituting “be more muscular” for “lose weight” and “have a muscular body” for “have a thin body”. Pressures to be lean were assessed through substituting “be more lean” for “lose weight” and “have a lean body” for “have a thin body,” respectively. A previous study has supported strong internal consistency (all Cronbach’s alphas $>.84$) and moderate correlations with body-ideal internalization for both measures within a sample of gay males (Tylka & Andorka, 2012). Internal consistency for the PSPS in the present study ranged from $\alpha=.87-.91$ for the muscularity subscale and from $\alpha=.84-.91$ for the leanness subscale. Stability of the PSPS within the control group was also strong for both subscales (muscularity $r=.81$; lean $r=.74$)

2.2.5.4.2 Alcohol Use Problems. Alcohol use problems were assessed through the Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ; Kahler, Strong, & Read, 2005), with items time-scale adjusted for over the past week (instead of past month). The B-YAACQ was included to ascertain the specificity of the intervention to eating disorder risk factors. The B-YAACQ has demonstrated strong internal consistency ($\alpha=.84-.89$), test-retest reliability, and sensitivity to changes in drinking following an alcohol intervention in a college-based sample (Kahler, Hustad, Barnett, Strong, & Borsari, 2008). Internal consistency for the B-YAACQ in the present study ranged from $\alpha=.90-.95$ and stability was $r=.51$.

2.2.5.5 Additional Variables of Interest

2.2.5.5.1 Community Affiliation. Level of involvement in the gay community was measured through two scales: the Collective Self-Esteem Scale (CSE; Luhtanen & Crocker, 1992, as adapted by Herek & Glunt, 1995) and the Importance of Gay/Bisexual Community Activities Scale (IGBCA; Martin & Dean, 1988, as adapted by (Herek & Glunt, 1995).

The CSE is a 9-item measure that assesses the importance of the respondents' status within the gay community to their identity. CSE items are rated on a 5-point scale, with response options ranging from (1) "strongly disagree" to (5) "strongly agree." The CSE has demonstrated strong internal consistency (α range= .86-.92; Andorka, 2007; Herek & Glunt, 1995) and concurrent validity with measures of self-esteem and community involvement (i.e., the Rosenberg Self-Esteem Scale (Rosenberg, 1965) and the IGBCA (Andorka, 2007)). Internal consistency for the CSE at baseline in the present study was $\alpha=.91$.

The IGBCA is an 11-item scale that assesses the importance of several activities associated with the gay male subculture in participants' lives. Respondents answer items related to level of importance to the respondent on a 4-point scale (with 1 = not at all important to you and 4 = very important to you). Previous studies have demonstrated the strong internal consistency (α range = .86-.89; Andorka, 2007; Herek & Glunt, 1995; Tylka & Andorka, 2012) and the discriminant validity of the IGBCA (from measures of internalized homophobia; Andorka, 2007; Herek & Glunt, 1995). Internal consistency for the IGBCA in the present study was $\alpha=.90$ at baseline.

2.3 Data Analytic Plan

2.3.1 Hypothesis 1

To address the hypotheses regarding the (1a) feasibility and (1b) acceptability of the intervention, descriptive analyses were run to assess recruitment, retention, and treatment acceptability. Additionally, patterns of missing data were analyzed to examine possible sources of biased attrition.

2.3.2 Hypotheses 2 and 3

Hierarchical linear modeling (HLM) was used to address hypotheses (2a) that men in the DB group would show significantly greater reductions on all measures over time compared to men in the WL group; (2b) that differences between groups would be maintained at 4-week follow-up; and (3) that results would be specific to the eating pathology variables targeted.

Analyses were run using the Mixed Models module of the Statistical Package for the Social Sciences (SPSS, Version 19). HLM controls for repeated assessments of participants nested within groups, without inflating type I error rates. Additionally, HLM allows for the inclusion of participants with missing data. Full information maximum likelihood estimation (FIML) was used to impute data missing at follow-up, as FIML offers the most accurate and sophisticated model-based approach to data that are missing at random (MAR) (Schafer & Graham, 2002).

Repeated measurements of the dependent variable nested within participants were modeled at Level 1, and intervention condition (DB intervention or WL control) and the interaction between condition and time were included at Level 2. To control for non-independence of observations for men who participated in the same group, group was initially included in all models as a Level 2 covariate. Group was removed from models if it was not a significant predictor of outcome, as recommended by Singer and Willett (2003). Separate models were run for each dependent variable (body dissatisfaction, drive for thinness and drive for muscularity, body-ideal internalization, dietary restraint, bulimic symptoms, negative affect, self- and partner-objectification, social pressures and alcohol use problems). Condition by time interactions were followed to determine whether the DB intervention was associated with greater reductions in risk factors compared to the WL condition at post-intervention and 1-month follow-up.

2.3.2.1 Model Fitting

Model fitting was approached in several steps. First, a random intercept, random slopes model was fit to the data in which the intercept for each person and his rate of change over time were allowed to vary. This provides the least restrictive approach. However, these models did not converge, indicating the models needed to be re-specified. Analyses were then run examining two possible alternative models: (1) a fixed intercept, random slope model and (2) a random intercept, fixed slope model (Seltman, 2014). Inspection of variance estimates of the two models determined that the variance estimate for intercept was significant while the variance estimate for slope was not significant, indicating that slope should not be included as a

random effect (Seltman, 2014). Additionally, the random intercept, fixed slope model provided a better fit to the data (e.g., Body Shape Questionnaire: BIC (fixed intercept, random slope) = 1957.53; BIC (random intercept, fixed slope) = 1843.45), supporting the decision to use a random intercept, fixed slopes model for analyses. Given that the final models included only one random effect, an identity covariance matrix was used for all analyses. Based on initial inspection of the trajectory of group means across time points, a nonlinear (squared) effect of time was included in the model to determine whether this parameter provided a better fit over a model that included only a linear effect of time. Across all models, fit indices (AIC, BIC) supported inclusion of a squared effect of time in models (e.g., Body Shape Questionnaire: BIC (Time) = 1871.59; BIC (Time and Time²) = 1843.45).

2.3.3 Exploratory Hypothesis 4

To address the exploratory fourth hypothesis, that reductions in eating pathology (i.e., bulimic symptoms) over the course of time would be mediated by decreases in body-ideal internalization, Shrout and Bolger's (2002) bootstrap procedures were used to estimate indirect effects. Bootstrapping is a non-parametric procedure that involves repeated random sampling of observations with replacement from the dataset. Bootstrapping generates an estimate of the indirect effect, including a 95% confidence interval. When zero is not in the 95% confidence interval, one can conclude that the indirect effect is significantly different from zero at $p < .05$ and, thus, that the effect of the independent variable on the dependent variable is mediated by the proposed mediating variable. These methods have the advantage of increased statistical power over traditional tests of indirect effects (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Specifically, we used 1,000 bootstrap resamples to test the indirect effects of condition via the posited mediating variable (i.e., body-ideal internalization) on eating pathology (i.e., bulimic symptoms) (Preacher & Hayes, 2008). Bulimic symptoms were chosen as the measure for eating pathology in mediation analyses, given that in a selected sample, bulimic symptoms are a more potent behavioral indicator of actual eating disorder psychopathology and map more

directly onto DSM-5 eating disorder diagnoses compared to variables related to weight and shape concerns. In addition, behavioral bulimic symptoms are conceptually distinguishable from the posited cognitive mediators of change in eating pathology.

2.3.4 Exploratory Hypothesis 5

To address the exploratory fifth hypothesis, that baseline eating disorder risk and baseline involvement in the gay community would moderate treatment outcome, these measures were added into the Level 2 HLM model, along with the interactions between these variables, time, and condition. Baseline BSQ total score was used to measure eating disorder risk severity, consistent with methodology used by Becker and colleagues (2005), and baseline CSE score was used to measure LGBT community involvement. Separate models were run for each moderator (BSQ and CSE scores), and models were run for all eating disorder-related outcome variables (body dissatisfaction¹, drive for thinness and muscularity, body-ideal internalization, dietary restraint, bulimic symptoms, negative affect, and self- and partner-objectification). We tested for a 3-way interaction between condition, time, and each proposed moderator. Significant moderator X time X condition interactions were followed up at 1 SD above and below the mean of the moderator for both conditions at post-intervention and 1-month follow-up.

2.3.5 Power Analysis

An *a priori* power analysis using G*Power version 3.1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2007) supported that a sample size of $n=60$ would provide 80% power at $\alpha=.05$ to detect moderate effect sizes ($f^2=.15$) for group differences. This estimate was comparable to effect sizes replicated across prior DB studies (Becker et al., 2006). While the above analyses were conducted for repeated measures analysis of variance (ANOVA), the sample size was

¹ Given that the BSQ was an outcome measure as well, we did not use the BSQ as a dependent variable for within moderator analyses for baseline eating disorder risk. The two other measures of body dissatisfaction (the MBAS Body Fat and Muscularity Dissatisfaction subscales) were used as dependent variables within moderator analyses for baseline eating disorder risk.

adequate to detect medium effects, given that HLM increases power compared to ANOVA. Further, the use of FIML to impute missing data for participants who completed baseline assessments also increased power within the present study. Consistent with this, a post hoc power analyses supported that the sample at baseline ($n=72$) provided 88% power at $\alpha=.05$ to detect moderate effect sizes ($f^2=.15$) and 99% power to detect large effect sizes ($f^2=.15$) for group differences.

CHAPTER THREE

RESULTS

3.1 Dissonance-Based Intervention Pilot Study

After the program was drafted and revised utilizing feedback from members of the gay community, a small pilot study was conducted to evaluate initial acceptability. A total of 10 gay men were consented and scheduled into the pilot study. Six men (60%) attended Session 1, and all (100%) completed Session 2. Acceptability ratings for the program were highly favorable for all items (mean for general helpfulness: 6.50 out of 7; helpfulness in improving own body image: 5.67 out of 7; overall satisfaction with the program: 6.50 out of 7; and likelihood of recommending the program to a friend: 6.17 out of 7). The men who completed the program did not have any substantial suggestions regarding changes for the program. Thus, we retained the program used for the pilot for the randomized controlled trial. In addition, we utilized information obtained during the pilot study to adapt the approach to forming and scheduling groups to reduce delays between consent and when the first group would meet. Specifically, we opted to form smaller groups with a minimum first session of $n=4$.

3.2 Randomized Controlled Trial

3.2.1 Baseline Characteristics

The DB and WL conditions did not differ on age ($F(1,71) = .15, p = .70$) or ethnicity ($\chi^2(4) = 2.14, p = .71$). Participants were approximately 21 years old (Mean (SD) = 21.48 (2.53), range = 18-30). The racial and ethnic breakdown was as follows: Caucasian (56.9%), Hispanic/Latino (22.2%), African American (16.7%), Native American (2.8%), and Other (1.4%). The majority of participants were currently in school pursuing an undergraduate (72.5%) or graduate degree (19.2%). Groups did not differ on likelihood of currently being in treatment for emotional or psychiatric problems ($\chi^2(1) = 2.22, p = .14$), with 10.9% of participants currently receiving treatment. No participants were currently receiving treatment for an eating disorder. In

addition to the eating disorder risk outcomes, described below, groups did not differ on baseline level of LGBT community involvement (both p -values $>.09$).

3.2.3 Treatment Adherence, Leader Competence, and Homework Completion

All intervention sessions were audiotaped, and four of the nine group tapes were randomly selected for treatment adherence and leader competence ratings (one group randomly selected for each co-leader). Competence ratings were completed by one doctoral level-clinician and two masters-level clinicians (including the investigator), all of whom attended the training led by Dr. Becker. The investigator provided ratings for two of her co-leaders, but did not provide ratings for herself, to avoid inherent biases. All adherence ratings were above 94%, demonstrating excellent adherence to the manual. Regarding leader competence, ratings fell in the above average/excellent range (Investigator rating: 9.10/10; co-leaders average = 7.62/10).

Regarding homework completion, the majority of participants who attended the second session of the program completed all of the between-session activities/homework (83.9%). Of those who did not complete the assignments fully, three individuals (9.7%) completed their behavioral challenge once during the week (instead of twice) and two individuals (6.5%) completed two of the three assignments. Thus, all participants (100%) completed at least some of the assigned homework between the first and second session.

3.3 Hypothesis 1: Feasibility & Acceptability

Regarding participant flow, 133 men completed the eligibility phone screen for the study (see Figure 1). Of the 133 men who completed the phone screen, 82% were eligible ($n=109$). Of the 24 men who were ineligible, 25% were diagnosed with a DSM-5 eating disorder ($n=6$), 71% did not meet the sexual orientation criteria ($n=17$), and 4% did not meet the age requirement ($n=1$). Of the eligible participants, 80% ($n=87$) signed the consent form and were randomized. 77% of participants in the DB condition ($n=36$) attended the first session and completed baseline assessments, while 90% ($n=36$) of WL participants completed baseline assessments.

To account for greater attrition in the DB group and the need to form groups with a minimum of 4 participants with minimal delays between recruitment and session 1, we over-recruited for participants in the DB condition.

Regarding feasibility, we successfully randomized 87 gay males in the study (n=47 in the DB program, n=40 in the WL condition). Regarding acceptability, the retention rate in the DB intervention was 86% (n=31) and did not differ from WL (89%, n=32) ($\chi^2(1) = .13, p = .72$). The acceptability ratings for the program were highly favorable for all items (overall mean= 6.18 on a 7-point scale): (1) “How helpful did you find this program in promoting a positive body image?” (Mean (SD) = 6.16 (1.00), on a 7-point scale); (2) “How helpful did you find this program in improving your own body image?” (Mean (SD) = 5.77 (1.09)); (3) “How satisfied were you with the overall program?” (Mean (SD) = 6.32 (.98)); and (4) “How likely would you be to recommend this program to a friend?” (Mean (SD) = 6.45 (1.00)).

Compared to individuals who dropped out of the intervention (n=5/36), treatment completers (n=31/36) did not differ significantly on age ($F(1,34) = .06, p = .80$), relationship status ($\chi^2(1) = .23, p = .63$), baseline EDE-Q total score ($F(1,34) = .51, p = .48$), self-objectification ($F(1,34) = .00, p = .98$), partner-objectification ($F(1,34) = .08, p = .79$), negative affect ($F(1,34) = .24, p = .63$), or sexual attractions ($\chi^2(2) = 3.31, p = .19$). However, treatment completers were more likely to identify as “exclusively homosexual/gay” than those who dropped out of treatment (completers: 73%, non-completers: 20%). Those who dropped out of treatment were more likely to identify as “mostly homosexual/gay” or “more homosexual/gay” (completers: 27%, non-completers: 80%; $\chi^2(2) = 6.06, p = .048$). Within the control group, completers did not differ from non-completers on sexual identity ($\chi^2(4) = 7.19, p = .13$).

3.4 Hypothesis 2 & 3: Treatment Efficacy Pre- to Post-Intervention & Maintenance of Treatment Effects over 4-week Follow-Up

Tables 1 and 2 present raw means and estimated margin means, respectively, for each outcome variable across time by condition. Table 3 presents HLM estimates for fixed effects

and variance components for primary outcome variables. Results below are presented by construct. For brevity, when results from multiple measures of the same construct converged, results for secondary measures have been described briefly.

3.4.1 Primary Eating Disorder Risk Factor Outcome Variables

3.4.1.1 Body Dissatisfaction. Results from the random intercept, fixed slopes model for the BSQ demonstrated a significant effect for time ($b = -6.08$, $t = -7.28$, $p < .001$), reflecting an overall reduction in body dissatisfaction for all participants. As predicted, there was a significant Condition X Time interaction ($b = 5.03$, $t = 4.35$, $p < .001$), indicating that the trajectory of BSQ scores from pre-intervention to 4-week follow-up differed by condition, with a faster decline in scores over time for the DB group (see Table 3). Comparison of group means revealed that while conditions did not differ at baseline ($p = .99$), the DB group demonstrated significantly lower BSQ scores compared to WL post-intervention ($p = .002$, Cohen's $d = 0.82$; see Table 2). Further, these treatment gains were maintained at 4-week follow-up, with the DB group demonstrating significantly lower BSQ scores than WL ($p = .002$, $d = 0.78$; See Figure 2 for a graphical depiction of results). Demonstrating a clinically meaningful change in symptoms, at baseline, the mean values for the DB and WL condition were 93.94 and 93.97, respectively, which is within the “mild concern with weight and shape” range. Post-intervention, the DB group dropped below the cutoff for “no concern with weight and shape” (mean = 64.46) and maintained this level at 4-week follow-up (cut-off=80; psytc.org/tools/bsq/). Results for the MBAS Body Fat subscale mirrored those for the BSQ (see Tables 2 & 3 and Figure 3).

Results for the MBAS Muscularity subscale demonstrated a significant effect for time ($b = -0.12$, $t = -4.76$, $p < .001$), reflecting an overall reduction in muscularity dissatisfaction for all participants, regardless of condition. Unlike results for the BSQ and MBAS, there was a significant effect of condition ($b = 0.84$, $t = 2.40$, $p = .02$), signifying that MBAS Muscularity differed between conditions at baseline. There was also a significant effect of group ($b = 0.12$, $t = 2.34$, $p = .02$), indicating that within the DB condition, groups differed in their baseline MBAS

Muscularity scores. Further, the Condition X Time interaction approached significance ($b = 0.06$, $t = 1.81$, $p = .07$), suggesting that the trajectory of MBAS Muscularity subscale scores from pre-intervention to 4-week follow-up marginally differed by condition, with a marginally faster decline in muscularity dissatisfaction over time for those in the DB condition (see Table 3). At baseline, the WL condition started out with higher muscularity dissatisfaction than the DB condition ($p = .01$). Post-intervention, the DB group demonstrated significantly lower MBAS Muscularity scores compared to WL ($p = .001$, Cohen's $d = 1.04$; see Table 2). These effects were maintained at 4-week follow-up, with the DB group demonstrating significantly lower muscularity dissatisfaction than WL ($p < .001$, $d = 1.05$; See Figure 4).

3.4.1.2 Drive for Thinness & Muscularity. A significant effect of time was found for EDI Drive for Thinness ($b = -0.87$, $t = -5.60$, $p < .001$), reflecting an overall reduction in drive for thinness. The significant Condition X Time interaction ($b = 0.71$, $t = 3.29$, $p = .001$) demonstrated that the reduction of EDI Drive for Thinness scores from pre-intervention to 4-week follow-up differed by condition and was greater in the DB group compared to WL (see Table 3). Comparison of group means revealed no difference between conditions at baseline ($p = .60$), whereas the DB group demonstrated significantly lower EDI Drive for Thinness scores compared to WL post-intervention ($p = .01$, Cohen's $d = 0.66$; see Table 2). These treatment effects were maintained at 4-week follow-up, with the DB group endorsing significantly lower EDI Drive for Thinness scores than WL ($p = .003$, $d = 0.76$; See Figure 5).

Results for the DMS demonstrated a significant effect for time ($b = -0.13$, $t = -4.61$, $p < .001$), reflecting an overall reduction in drive for muscularity for all participants, and group ($b = 0.09$, $t = 1.97$, $p = .05$), indicating that groups differed in their baseline DMS scores. As hypothesized, a significant Condition X Time interaction was found ($b = 0.13$, $t = 3.38$, $p = .001$), demonstrating that the trajectory of DMS scores from pre-intervention to 4-week follow-up differed by condition, with a steeper decline in scores for the DB group over time (see Table 3). Mean comparisons revealed that while conditions did not differ on DMS scores at baseline ($p =$

.12), the DB group demonstrated significantly lower DMS scores compared to WL post-intervention ($p = .001$, Cohen's $d = 1.01$; see Table 2). These intervention effects were maintained 4-weeks later, with the DB group reporting significantly lower drive for muscularity compared to WL ($p = .003$, $d = 0.86$; See Figure 6).

3.4.1.3 Body-Ideal Internalization. Results from the random intercept, fixed slopes model for the SATAQ-Internalization General subscale demonstrated a significant effect for time ($b = -1.48$, $t = -5.24$, $p < .001$), indicating a reduction in body-ideal internalization for all participants across time. As expected, there was also a significant Condition X Time interaction ($b = 1.30$, $t = 3.28$, $p = .001$), reflecting that the trajectory of SATAQ scores from pre-intervention to 4-week follow-up differed by condition, with a greater decline in scores for the DB group (see Table 3). While conditions did not differ at baseline ($p = .54$), the DB group demonstrated significantly lower SATAQ scores compared to WL post-intervention ($p = .02$, Cohen's $d = 0.61$; see Table 2). However, unlike results for other variables tested, these treatment gains were not maintained, as there were no differences in body-ideal internalization observed between the DB group and WL at 4-week follow-up ($p = .39$, $d = 0.23$; see Figure 7). While both groups had lower mean body-ideal internalization at 4-week follow-up compared to baseline (DB group: $t(28) = 15011.24$, $p < .001$; WL group: $t(30) = 12877.42$, $p < .001$), there was a slight improvement in the WL group from post-intervention to follow-up ($t(30) = 27442.55$, $p < .001$) and a slight worsening in the DB group ($t(28) = 7093.98$, $p < .001$). Notably, the reduction in body-ideal internalization within the DB group from baseline to follow-up was still of a medium effect size ($d = .68$), while the reduction was small for the WL controls ($d = .30$). Further, baseline scores for the DB group were approximately 1 SD above the mean demonstrated in a previous study of males (mean(SD)=21.99(7.89); Karazsia & Crowther, 2008), supporting the high-risk nature of the sample. Post-intervention, the DB group's scores were reduced from 28.77 to the level of the mean for Karazsia & Crowther's (2008) study, signifying a clinically meaningful reduction in symptoms post-intervention.

3.4.1.4 Dietary Restraint. Results for the EDE-Q Restraint subscale revealed a significant effect of time ($b = -0.25$, $t = -5.37$, $p < .001$), indicating a reduction in dietary restraint for participants overall. As predicted, a significant Condition X Time interaction was significant ($b = 0.17$, $t = 2.49$, $p = .01$), with the DB group demonstrating a faster decline in scores over time compared to WL (see Table 3). While conditions did not differ at baseline ($p = .49$), the DB group demonstrated significantly lower EDE-Q Restraint scores compared to WL post-intervention ($p = .003$, Cohen's $d = 0.76$; see Table 2), and these gains were maintained at 4-week follow-up ($p = .04$, $d = 0.51$; See Figure 8). Further, these results represent a clinically meaningful reduction in restraint. The DB group's scores were reduced from the 75th-80th percentile for undergraduate males at baseline (mean = 1.82) to the 45th percentile post-intervention and the 55th percentile at follow-up (Lavender, De Young, & Anderson, 2010).

3.4.1.5 Bulimic Symptoms. Results for the EDE-Q bulimic symptoms composite revealed a significant effect of time ($b = -0.95$, $t = -5.38$, $p < .001$) and a significant Condition X Time interaction ($b = 0.73$, $t = 2.96$, $p = .004$), with the DB group demonstrating a faster decline in bulimic symptoms over time compared to WL (see Table 3). Bulimic symptoms at baseline did not differ between conditions ($p = .16$); however, the DB group demonstrated significantly lower EDE-Q Bulimic symptoms compared to WL post-intervention ($p < .001$, Cohen's $d = 0.92$; see Table 2). Moreover, these effects were maintained at 4-week follow-up, with the DB group reporting significantly lower bulimic symptoms than WL ($p = .001$, $d = 0.84$; See Figure 9). Signifying clinically meaningful change, the DB group's score was reduced from 7.85 at baseline to 3.22 and 2.98 at post-intervention and 4-week follow-up, respectively. Thus, at baseline, participants were engaging in approximately 8 diagnostic symptoms of bulimia nervosa per week (e.g., objective binge episodes, compensatory behaviors), and this symptom count was reduced to 3 symptoms at post-intervention and at follow-up.

Results for EDI Bulimia demonstrated a similar pattern to those for the EDE-Q bulimic symptoms composite, with the exception that conditions did not differ post-intervention ($p = .14$,

Cohen's $d = 0.38$; see Table 2). However, at 4-week follow-up, the DB group demonstrated significantly lower bulimic symptoms than WL ($p = .02$, $d = 0.62$; See Figure 10 for a graphical depiction of results). Additionally, these results represent a clinically meaningful reduction in bulimic symptoms. At baseline, the DB group's score (mean = 14.22) was approximately 1 SD above the mean in a previous study of gay men (pooled mean(SD)= 11.71(3.20); Boroughs & Thompson, 2002). These scores were reduced to the mean from this previous study at both post-intervention and follow-up. Thus, 4 weeks after intervention, gay males who had participated in the DB group no longer resembled a high-risk group.

3.4.1.6 Negative Affect. Results from the random intercept, fixed slopes model for PANAS negative affect demonstrated a significant effect for time ($b = -0.81$, $t = -3.95$, $p < .001$), reflecting an overall reduction in negative affect for all participants. The Condition X Time interaction approached significance ($b = 0.55$, $t = 1.88$, $p = .06$), with a marginally faster decline in scores over time for the DB group compared to WL (see Table 3). Conditions did not differ at baseline ($p = .23$), and the DB group demonstrated significantly lower negative affect compared to WL post-intervention ($p = .007$, Cohen's $d = 0.70$; see Table 2). At 4-week follow-up these group differences were maintained, with the DB group demonstrating significantly lower negative affect than WL ($p = .01$, $d = 0.64$; See Figure 11).

3.4.1.7 Self- and Partner-Objectification. Results for SOQ-Self scores revealed a significant effect of time ($b = -1.52$, $t = -3.86$, $p < .001$), and, as hypothesized, a significant Condition X Time interaction ($b = 1.43$, $t = 2.57$, $p = .01$), indicating that the DB group demonstrated a steeper decline in self-objectification across time compared to WL (see Table 3). Conditions did not differ at baseline ($p = .80$), and the DB group demonstrated significantly lower SOQ-Self scores compared to WL post-intervention ($p = .01$, Cohen's $d = 0.70$; see Table 2) and at follow-up ($p = .01$, $d = 0.63$; See Figure 12). Reflecting a clinically significant change, the DB program was associated with a shift from a self-evaluation based on appearance (or objectification) to a self-evaluation based on competence not observed in the control group.

Results for SOQ-Partner scores followed the pattern found for SOQ-Self scores (see Tables 2 & 3; see Figure 13).

3.4.2 Variables Evaluating Intervention Specificity

3.4.2.1 Social Pressures to Conform to the Body-Ideal. Consistent with the hypothesis that the efficacy of the DB intervention would not extend to social pressures to conform to the body-ideal, there was no significant Condition X Time interaction for the PSPS Lean subscale ($b = 0.04$, $t = 0.95$, $p = .34$; see Tables 2 and 3). Additionally, the PSPS Lean subscale did not demonstrate a significant effect for time ($b = -0.03$, $t = -1.27$, $p = .21$). Similarly, analyses of the PSPS Muscularity subscale did not demonstrate a significant effect for time ($b = -0.00$, $t = -0.11$, $p = .92$) or Condition X Time interaction ($b = 0.01$, $t = 0.24$, $p = .81$; see Tables 2 and 3).

3.4.2.2 Alcohol Use Problems. Results from the random intercept, fixed slopes model for the B-YAACQ demonstrated a significant effect for time ($b = -0.39$, $t = -2.48$, $p = .01$), representing an overall decrease in alcohol use problems from baseline to follow-up. Consistent with our hypothesis that the DB intervention would not impact non-targeted problems, the Condition X Time interaction was not significant for alcohol use problems ($b = 0.25$, $t = 1.16$, $p = .25$; see Tables 2 and 3).

3.5 Exploratory Hypothesis 4: Mediation Analyses of Condition on Bulimic Symptoms

The total indirect effect of body-ideal internalization (SATAQ Internalization General) on bulimic symptoms, measured by the EDE-Q bulimic composite, was estimated to lie between -2.3780 and $-.1047$ (see Figure 14). Because zero was not contained in the 95% confidence interval, we can conclude that the total indirect effect of the model was significantly different from zero at $p < .05$ and that body-ideal internalization mediated the effect of condition on bulimic symptoms. The direct effect of condition on bulimic symptoms when controlling for body-ideal internalization was no longer significant ($r = -1.70$, $p = .20$), indicating that reductions in

body-ideal internalization fully mediated the relationship between condition and the EDE-Q Bulimic Composite.

In contrast, the total indirect effect of body-ideal internalization on bulimic symptoms, measured by the EDI Bulimia subscale was estimated to lie between -2.5493 and .2664 (see Figure 15). Because zero was contained in the 95% confidence interval, the total indirect effect of the model was determined not to be significantly different from zero at $p < .05$, and it was concluded that body-ideal internalization did not mediate the effect of condition on EDI Bulimia.

3.6 Exploratory Hypothesis 5: Moderator Analyses

3.6.1 Baseline Eating Disorder Risk

A significant 3-way Condition X Time X BSQ total score interaction was observed for EDI Bulimia ($\gamma = .05$, $SE = .03$, $t(1, 126.66) = 2.03$, $p = .04$; pseudo $R^2 = .03$), indicating that the effect of condition on bulimic symptoms over time depended on baseline eating disorder risk severity. Specifically, for those with high body dissatisfaction as measured by the BSQ, individuals in the DB group had marginally lower bulimic symptoms at post-intervention ($p = .07$) and significantly lower bulimic symptoms at follow-up ($p = .001$) compared to WL; however, for those with low baseline eating disorder risk, the DB group was not associated with significantly lower bulimic symptoms than WL at either post-intervention ($p = .27$) or follow-up ($p = .40$).

Baseline BSQ score did not moderate the effect of condition for any other eating disorder-related outcome variables (all p -values $> .06$; Pseudo R^2 range = $<.0001 - .03$).

3.6.2 Baseline LGBT Community Involvement

There was a significant 3-way Condition X Time X CSE total score interaction observed for the DMS ($\gamma = -.01$, $SE = .005$, $t(1, 129.11) = -2.57$, $p = .01$; pseudo $R^2 = .05$), indicating that the condition's effect on drive for muscularity over time depended on baseline gay community involvement. Post-intervention, at both high and low levels of community involvement, the DB

group had lower drive for musicality compared to WL (both p -values $< .01$). However, at follow-up, the DB group had lower drive for thinness than WL only for those with low initial community involvement (high $p = .13$; low $p = .003$). Thus, those with low baseline community involvement responded more favorably to the intervention compared to those with high involvement at follow-up.

There were also significant 3-way Condition X Time X CSE total score interactions observed for EDI Drive for Thinness ($\gamma = -.07$, $SE = .03$, $t(1, 127.11) = -2.10$, $p = .04$; pseudo $R^2 = .04$) and EDE-Q restraint ($\gamma = -.02$, $SE = .01$, $t(1, 127.23) = -2.09$, $p = .04$; pseudo $R^2 = .04$), in the same pattern described for the DMS.

Baseline CSE score did not moderate the effect of condition for any other eating disorder-related outcome variables (all p -values $> .11$; Pseudo R^2 range = $.0002 - .02$).

CHAPTER FOUR

DISCUSSION

The purpose of the present study was to examine the feasibility, acceptability, efficacy, and specificity of *The PRIDE Body Project*[®], an adapted DB eating disorder prevention program for gay men. A total of 32 gay men completed the DB program, and the program was well-accepted and demonstrated a high retention rate. Consistent with our study hypotheses, the DB program decreased body dissatisfaction, drive for thinness and muscularity, dietary restraint, bulimic symptoms, negative affect, and self- and partner-objectification to a greater degree than WL post-intervention, and effects were maintained at 4-week follow-up. Further, improvements in the DB program were specific to eating disorder risk factors targeted within the intervention and did not extend to social pressures to conform to the body-ideal or alcohol use problems. Contrary to study hypotheses, results for body-ideal internalization were only partially supported, in that there were greater reductions in the DB condition compared to WL post-intervention, but no group differences were found at follow-up. Regarding exploratory analyses, body-ideal internalization was found to mediate treatment effects on bulimic symptoms as measured by the EDE-Q, but not by the EDI Bulimia subscale. Contrary to study hypotheses, those who had higher baseline eating pathology or lower gay community involvement reported greater and more long-lasting treatment effects, respectively.

Results from the present study provide additional support for objectification-based models of eating disorder risk in gay men (Tylka & Andorka, 2012). These models highlight body-ideal internalization as an important potential risk factor; however, prior research has been cross-sectional, limiting temporal and causal inferences (Tylka & Andorka, 2012). One way to help determine whether a potential risk factor is causal is to experimentally manipulate the factor using an intervention design, as this tests whether reductions in the posited factor cause reductions in risk for eating pathology (Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004). The DB program directly targeted body-ideal internalization by having participants challenge

sociocultural pressures to conform to the body-ideal and compared outcomes to a group in which body-ideal internalization was not altered. We successfully reduced body-ideal internalization and eating pathology over the course of the intervention and demonstrated that body-ideal internalization mediated changes in eating pathology. Thus, as predicted by the model, targeting body-ideal internalization in gay men not only leads to reductions in body-ideal internalization, but also leads to reductions in subsequent eating disorder risk factors (overall body dissatisfaction, body fat dissatisfaction, drive for thinness and muscularity, dietary restraint, bulimic symptoms, and self-and partner-objectification). Thus, our results support the importance of body-ideal internalization in models of eating pathology in gay men and provide preliminary support for body-ideal internalization as a causal risk factor for gay men.

Results also support and extend previous DB eating disorder prevention research, suggesting that a peer co-led DB program targeting internalization of the body-ideal is both acceptable and efficacious for gay men. Importantly, the retention rate across the program was comparable to retention rates across other DB studies (range: 88% - 91%; Becker et al., 2005; Stice et al., 2006). Similarly, the within-condition effect sizes for the DB group pre- to post-intervention were comparable to those from previous studies in women (Becker et al., 2008; Becker et al., 2006; Becker et al., 2010; Stice et al., 2006). Impressively, effect sizes for dietary restraint (current study $d = .95$; other studies $d = .24-.64$) and bulimic symptoms (current study $d = .58-.76$; other studies $d = .32-.56$) were larger than those found in previous research. For body dissatisfaction, effects within the present study were equivalent to or better than reported in previous research (current study $d = .63 - 1.0$; other studies $d = .23-.74$). Finally, effect sizes for both SATAQ body-ideal internalization (current study $d = .89$; other studies $d = .54-1.09$) and negative affect (current study $d = .62$; other studies $d = .51-.82$) were comparable to findings in the literature. Examining within-condition effect sizes for novel measures (the MBAS, drive for thinness, drive for muscularity, and self- and partner-objectification) revealed medium effect sizes (d range = $.50-.70$). The key exception to this pattern of results, the lack of significant

interaction for muscularity dissatisfaction, is likely a consequence of the WL group having higher baseline dissatisfaction compared to the DB group following randomization. Overall, efficacy results are comparable to those found in prior DB intervention studies in females, which is highly encouraging given the adaption to a novel population and the use of additional novel constructs particularly relevant to gay men.

To our knowledge, this was the first study to examine the impact of a DB intervention on either self- or partner-objectification directly. Particularly promising is the fact that the intervention not only reduced participants' self-objectification, but also their objectification of potential partners. This is relevant given that partner pressures play a significant role in increasing risk for eating pathology for gay men (Brown & Keel, 2012, 2013; Tylka & Andorka, 2012). Importantly, the program actually changed the criteria by which the participants evaluated potential mates across follow-up, from a more appearance-based focus to a more competence-based focus. These results support that the gay male "gaze" (Wood, 2004) is malleable through a DB framework. Further, this suggests that DB interventions have the potential to reduce pressures gay men face from potential partners, and subsequently, the gay male community as a whole. On a larger scale, this could have a considerable impact on reducing *actual* pressures from partners and the gay community to conform to the lean body-ideal, rather than just internalization of these pressures. Thus, while the DB intervention within the present study did not change the existence of pressures to conform to the body-ideal, results imply that with future large-scale dissemination and implementation, reducing these social pressures represents a viable objective.

Despite the strong retention rate, high acceptability ratings, and program efficacy, some men discontinued the program. The men that dropped out of the program were less likely to be "exclusively homosexual," indicating that perhaps gay males who did not identify specifically with this group may have found the intervention less acceptable or relevant. Consistent with this, sexual orientation was not a predictor of dropout in the control group. Research supports

that individuals who do not identify as “exclusively gay” feel less included within the gay community (Dodge et al., 2012). Thus, individuals within the present study who self-identified as “mostly gay” or “more gay” might have felt uncomfortable in a group of predominately “exclusively gay” men and/or may have felt that the group did not fulfill their specific needs. Indeed, little research has been conducted on specific risk factors for eating pathology across the spectrum of gay men due to sample size constraints, highlighting an area for future research. Such research may help contribute to the development of more specific and acceptable intervention efforts for men across a broader spectrum of sexual orientation.

While the lack of difference between groups at 4-week follow-up on body-ideal internalization was contrary to study hypotheses, there are several possible explanations for these null findings. First, it is possible that the post-intervention scores in the DB group may have been artificially reduced, given that assessments were completed immediately post-intervention, when the program exercises were most salient. Thus, it is possible that the delay between intervention and follow-up may contribute to reduced impact. However, this is unlikely given that all measures were administered immediately post-intervention, and significant effects were found at 4-week follow-up for almost all other variables. Alternatively, it is possible that the two sessions did not supply a strong enough dose of treatment in order to have a long-lasting effect on body-ideal internalization. However, the within-group effect size comparing baseline to one-month follow-up in the DB group was still medium-large ($d = .68$), while the effect for the WL was small ($d = .30$), suggesting that the program did have an impact on body-ideal internalization one-month later. Additionally, the within-group effect size in the WL group was higher than in other DB studies ($d = .14$; Becker, Smith, & Ciao, 2005). Thus, the lack of significant difference between the DB and WL conditions is likely due to the significant reduction in the control group between the second and third assessments. If this is true, a larger sample as well as a longer duration of follow-up may help elucidate whether differences between the DB and WL conditions can be maintained over time.

4.1 Test of Hypothesized Mediators of the DB Intervention

Although mediation results were exploratory, there was partial support for the hypothesis that body-ideal internalization mediates treatment effects on bulimic symptoms, with significant results for bulimic symptoms measured by the EDE-Q composite but not measured by the EDI Bulimia subscale. Results for the EDE-Q composite are consistent with mediation results from Stice and colleagues (2007) and extend these results to gay men. These results are also consistent with the theoretical premise of DB interventions, and support that having gay men actively challenge the body-ideal results in decreased eating pathology.

There are several possible explanations for the lack of significant mediation on the EDI Bulimia subscale. First, we were underpowered for mediation analyses, which likely limited our ability to detect significant results for EDI Bulimia. Given that the program's effects on bulimic symptoms as measured by the EDE-Q had a more robust effect than for EDI Bulimia, the lack of significant mediation may have been a reflection of the smaller treatment effects on EDI Bulimia. Further, the EDE-Q composite has been the measure used by other DB intervention studies that have found mediating effects of thin-ideal internalization on bulimic symptoms in women (Becker et al., 2008; Stice et al., 2006), whereas these studies did not examine the EDI Bulimia subscale. Additionally, the EDI Bulimia subscale is a better proxy of binge eating than the full range of bulimic symptoms which include both binge eating and compensatory behaviors. Indeed, the EDI Bulimia subscale is heavily weighted towards items that assess propensity towards binge eating whereas the EDE-Q composite is more weighted towards various forms of compensatory behaviors. According to objectification theory, internalization of a lean, muscular ideal would be more strongly linked to the desire to become more *lean* and muscular. This would lead men to engage in behaviors consistent with the lean, muscular ideal (i.e. compensatory behaviors) rather than behaviors inconsistent with this ideal (binge eating). Thus, reducing internalization of a lean, muscular body-ideal should have a greater impact on

reducing compensatory behaviors than reducing bingeing behaviors, which is consistent with our results.

4.2 Test of Hypothesized Moderators of the DB Intervention

Although we were underpowered to fully examine moderation within the present study, there were some findings worthy of discussion. Regarding baseline eating disorder risk, contrary to study hypotheses, there were stronger effects for those with high versus low baseline body dissatisfaction. Although these results appear to differ from Becker and colleagues (2008), the authors of that study compared the DB condition to an active control condition (Media Advocacy (MA)) and thus results are not directly comparable across studies. Becker and colleagues (2008) found that high-risk individuals improved in both the DB and MA conditions, but that those in the low-risk group only improved in the DB condition. Thus, it is unclear how the high- and low-risk participants in the DB group compared to WL. Results within the present study are also potentially a consequence of floor effects in the low-risk group.

Results for baseline gay community involvement were also contrary to study hypotheses, in that intervention effects for restrictive disordered eating variables (drive for thinness and dietary restraint) were more long-lasting for the DB group if men were lower in community involvement. Pressures to conform to the body-ideal are not only prominent within the gay community (Siever, 1994; Tylka & Andorka, 2012; Wood, 2004), but are also directly related to internalization of the body-ideal and disordered eating behaviors (Tylka & Andorka, 2012; Beren et al, 1996). Thus, men who were more involved in the gay community may have experienced greater sociocultural pressures to be lean between intervention and follow-up compared to those with low involvement. This could explain the slight rebound for the high involvement group on restrictive eating pathology at 4-week follow-up. Future DB studies could examine the efficacy of adding booster sessions for individuals high in community involvement to evaluate whether this facilitates maintenance of intervention gains in this group. However, given the exploratory nature of these analyses, replication is a necessary next step.

4.3 Strengths

The current study benefited from several strengths. First, the use of a preliminary open-trial to pilot the program allowed for feedback from group members prior to conducting the full RCT and informed our approach to creating and scheduling groups for the RCT to minimize pre-intervention attrition. Second, the randomized controlled design with a waitlist control group allowed us to determine the efficacy of the intervention accounting for the passage of time. Third, the inclusion of a one-month follow-up permitted the evaluation of the maintenance of intervention gains, at least in the short-term. Fourth, the use of psychometrically sound measures increases confidence in the validity of the results. Further, the use of multiple measures for each construct provides more nuanced information about the specificity of the intervention and increases confidence in the reliability of the results. Fifth, the use of the SCID-I eating disorders module during the screening interview ensured a more accurate determination of eligibility (e.g., DSM-5 eating disorder status) than the use of self-report measures alone. While the use of diagnostic interview for determining eligibility was important, the use of self-report outcome measures was also advantageous due to the potentially stigmatized nature of the topics of sexual orientation and disordered eating. Indeed, previous studies have found that self-report assessments are associated with greater candidness compared to interview-based assessments when assessing eating pathology (Keel, Crow, Davis, & Mitchell, 2002; Lavender & Anderson, 2009). Sixth, the inclusion of measures of sociocultural pressures and alcohol use problems allowed determination of the specificity of the intervention to eating disorder risk factors targeted within the program. Seventh, the ethnically diverse sample increases generalizability to gay men of varying ethnic backgrounds, potentially increasing the external validity of the results. Eighth, the study benefited from a high retention rate over the intervention and follow-up period, which also increases confidence in the generalizability of results. Finally, the use of HLM accounted for repeated assessments of participants over time nested within condition, without inflating type-I error rates. Although attrition was minimal, the use of FIML

also represented a strength, as FIML is the preferred approach for accounting for individuals with data missing at random.

4.4 Limitations and Future Directions

With the methodological strengths of the present study in mind, there were also some limitations worth noting. First, regarding exploratory analyses, we had limited power to detect significant mediation and moderation effects. Notably, despite this limitation, statistically significant effects were found for both sets of analyses. Second, the present study did not include an active treatment control, which would have provided a more stringent test of the efficacy of *The PRIDE Body Project*®. However, given that this was the first RCT of a DB eating disorder prevention program for gay men, it was essential to determine the efficacy of the intervention compared to no treatment, in order to determine whether further investigation of the treatment was warranted. Third, the 2-session version of The Body Project (versus the 4-session version) was selected for adaptation in the present study due to feasibility concerns. While the results of the present 2-session program were quite impressive, it is possible that outcomes may be strengthened by the use of a higher dose of treatment over a slightly longer period of time. This may be particularly relevant for the present study in terms of improving the maintenance for body-ideal internalization at follow-up. While it is possible that a higher dose of treatment may be more helpful for gay men, this is not consistent with the literature in women, in which both the 2-session and 4-session versions of The Body Project have had similarly efficacious outcomes. Fourth, while the addition of a one-month follow-up represents a strength, conclusions about the potential efficacy of the intervention past one month cannot be determined. Given that DB intervention studies have found effects lasting up to one year post-intervention (Stice et al, 2008), it would be valuable for future studies to determine whether this effect holds for the application of our intervention in gay men as well. Finally, given that men were only included if they were more attracted to men than to women, results may not be applicable across the spectrum of sexual minority men. This may be particularly relevant given

that a greater dropout rate was observed for men who identified as “mostly” or “more” homosexual. Future studies should determine specific risk factors across the spectrum of gay men and use these risk factors to create more specific interventions for these groups.

An important future direction for this field of research lies within maximizing the effectiveness and use of peer co-leaders. Peer leaders serve an important role in these programs, as they increase the relevance of the program, model healthy attitudes and behaviors, and promote positive social comparisons. Within the present study, the competency ratings were good for the peer co-leaders, albeit not as strong as that of the MA-level clinician. Future research should conduct effectiveness trials to determine whether a fully peer-led version of the DB program is as feasible and efficacious as within the present study. These future studies would provide more certain information about the disseminability of *The PRIDE Body Project*®.

4.5 Conclusions

In summary, results from the current study support the efficacy of our DB eating disorder prevention program, *The PRIDE Body Project*®, in reducing eating disorder risk factors among gay men. Results add to the extensive literature on the efficacy of DB eating disorder preventions and extend these results to gay males, who represent a high-risk, but underserved population. Findings also highlight the malleability of body-ideal internalization and support the importance of this variable in models of risk for eating pathology among gay men. Given our promising results, future studies should build upon the present work by examining alternative treatment controls (to rule out placebo effects). Possible alternative treatments that have been used in previous DB studies include, but are not limited to, Healthy Weight Interventions (Stice et al., 2006) and Media Advocacy Interventions (Becker et al., 2008; Becker et al., 2006). Further, given research supporting that body image concerns are on the rise among men, regardless of orientation (Hudson et al., 2007; Striegel, Bedrosian, Wang, & Schwartz, 2011), future studies would benefit from examining whether DB interventions might be adapted and

evaluated to address body image concerns for men with body image concerns, regardless of their sexual orientation. Overall, results from the present study and these future areas of research will help fill a critical gap in the care provided to a growing demographic among those at risk for the development of eating disorders.

Table 1

Raw Means (SDs) for Outcome Variables at Each Time Point by Condition

Measure	Baseline <i>M (SD)</i>		Post-Intervention <i>M (SD)</i>		4-week Follow-up <i>M (SD)</i>	
	DB	Control	DB	Control	DB	Control
Body Dissatisfaction						
BSQ	93.94 (31.85)	93.96 (38.62)	65.03 (20.17)	88.73 (36.95)	64.68 (21.91)	88.57 (33.92)
MBAS–Body Fat	3.83 (1.44)	3.98 (1.25)	3.06 (1.13)	3.71 (1.25)	3.08 (1.29)	3.72 (1.18)
MBAS–Muscularity	3.82 (1.07)	4.16 (1.06)	3.20 (1.16)	3.91 (1.07)	3.16 (1.14)	3.88 (1.03)
Drive for Thinness & Muscularity						
EDI DT	15.97 (7.77)	16.81 (7.61)	12.13 (5.76)	16.00 (7.16)	11.69 (5.78)	16.06 (6.79)
DMS	3.36 (0.93)	3.43 (1.13)	2.70 (0.93)	3.44 (1.03)	2.77 (0.92)	3.37 (0.99)
Body-Ideal Internalization						
SATAQ-General	28.77 (8.29)	27.56 (9.42)	21.58 (7.83)	27.00 (7.95)	22.93 (8.77)	25.23 (8.90)
Dietary Restraint						
EDE-Q Restraint	1.82 (1.52)	2.04 (1.55)	0.57 (0.92)	1.68 (1.47)	0.73 (1.36)	1.56 (1.33)
Bulimic Symptoms						
EDE-Q Bulimic sx _s	7.85 (5.32)	9.96 (9.43)	3.30 (2.40)	8.91 (8.14)	2.96 (3.60)	8.16 (6.73)
EDI Bulimia	14.22 (5.25)	13.69 (5.99)	11.55 (4.15)	13.38 (5.55)	11.28 (4.29)	13.97 (6.30)
Negative Affect						
PANAS NA	20.81 (6.84)	22.71 (7.53)	16.68 (5.16)	21.31 (7.36)	15.97 (5.15)	20.55 (7.74)
Self/Partner Objectification						
SOQ-Self	2.08 (10.23)	2.75 (9.07)	-5.26 (13.86)	2.50 (10.17)	-3.07 (13.11)	3.77 (10.75)
SOQ-Partner	0.81 (10.36)	1.44 (8.98)	-4.19 (13.57)	2.63 (9.86)	-3.46 (8.98)	1.87 (10.60)
Social Pressures						
PSPS-Lean	2.59 (0.92)	2.48 (1.20)	2.37 (0.91)	2.48 (0.98)	2.21 (0.67)	2.42 (0.99)
PSPS-Muscularity	2.65 (0.93)	2.47 (1.16)	2.57 (0.89)	2.49 (1.01)	2.30 (0.78)	2.46 (1.02)
Alcohol Use Problems						
B-YAACQ	5.14 (4.97)	4.80 (5.97)	3.13 (4.55)	3.91 (4.37)	2.79 (5.41)	2.84 (4.85)

Note. BSQ = Body Shape Questionnaire; BYAACQ = Brief Young-Adult Alcohol Consequences Questionnaire; DMS = Drive for Muscularity; EDI Bulimia = Eating Disorder Inventory Bulimia subscale; EDI DT = Eating Disorder Inventory Drive for Thinness subscale; EDE-Q Bulimic sx_s = Eating Disorder Examination Questionnaire - Bulimic Composite; MBAS – Body Fat = Male Body Attitudes Scale – Body Fat subscale; MBAS – Muscularity = Male Body Attitudes Scale – Muscularity subscale; PANAS NA = Positive and Negative Affect Schedule – Negative Affect subscale; PSPS – Lean = Perceived Sociocultural Pressures Scale – Lean subscale; PSPS – Muscularity = Perceived Sociocultural Pressures Scale – Muscularity subscale; SATAQ-General = Sociocultural Attitudes Towards Appearance Questionnaire – Internalization General subscale; SOQ – Partner = Self Objectification Questionnaire – Partner subscale; SOQ – Self = Self Objectification Questionnaire – Self subscale.

Table 2

Estimated Marginal Means for Outcome Variables at Each Time Point by Condition

Measure	Baseline M (SE)		Post-Intervention M (SE)		4-week Follow-up M (SE)		Cohen's <i>d</i> Post		Cohen's <i>d</i> Follow-up	
	DB	WL	DB	WL	DB	WL	DB	WL	DB	WL
Body Dissatisfaction										
BSQ	93.94 (5.20)	93.97 (5.20)	64.46** (5.38)	88.91 (5.26)	65.03** (5.45)	88.84 (5.36)	1.00	.17	.82	.17
MBAS–Body Fat	3.84 (0.21)	3.98 (0.21)	3.06* (0.21)	3.71 (0.21)	3.10* (0.21)	3.70 (0.21)	.67	.23	.55	.24
MBAS–Muscularity	3.54* (0.21)	4.44 (0.21)	2.95** (0.21)	4.17 (0.21)	2.87*** (0.22)	4.14 (0.21)	.63	.23	.51	.25
Drive for Thinness & Muscularity										
EDI DT	15.97* (1.13)	16.81 (1.13)	11.74* (1.16)	16.03 (1.14)	11.44** (1.17)	16.41 (1.16)	.66	.12	.70	.06
DMS	3.15 (0.19)	3.63 (0.19)	2.53** (0.20)	3.64 (0.19)	2.61** (0.20)	3.57 (0.20)	.57	.01	.50	.05
Body-Ideal Internalization										
SATAQ-General	28.77 (1.40)	27.56 (1.40)	21.64* (1.47)	26.63 (1.45)	23.22 (1.51)	25.04 (1.48)	.89	.12	.68	.31
Dietary Restraint										
EDE-Q Restraint	1.82 (0.23)	2.04 (0.23)	0.58** (0.24)	1.61 (0.24)	0.80* (0.25)	1.50 (0.24)	.95	.32	.76	.41
Bulimic Symptoms										
EDE-Q Bulimic sx	7.85 (1.06)	9.96 (1.06)	3.22** (1.10)	8.88 (1.09)	2.98*** (1.11)	8.17 (1.10)	.76	.18	.81	.29
EDI Bulimia	14.22 (0.88)	13.69 (0.88)	11.31 (0.91)	13.22 (0.89)	11.11* (0.92)	14.29 (0.91)	.58	.09	.62	.12
Negative Affect										
PANAS NA	20.81 (1.12)	22.71 (1.12)	16.83** (1.17)	21.38 (1.16)	16.63* (1.19)	20.87 (1.17)	.62	.21	.65	.28
Self/Partner Objectification										
SOQ-Self	2.08 (1.83)	2.75 (1.83)	-5.25** (1.93)	2.34 (1.91)	-3.51* (2.00)	3.49 (1.93)	.70	.04	.52	.07
SOQ-Partner	0.81 (1.71)	1.44 (1.71)	-4.09* (1.81)	2.51 (1.79)	-3.67* (1.87)	1.76 (1.81)	.50	.11	.45	.03
Social Pressures										
PSPS-Lean	2.59 (0.16)	2.48 (0.16)	2.42 (0.17)	2.48 (0.17)	2.30 (0.17)	2.45 (0.17)	.20	.00	.32	.03
PSPS-Muscularity	2.65 (0.16)	2.47 (0.16)	2.63 (0.17)	2.50 (0.17)	2.38 (0.17)	2.49 (0.17)	.02	.03	.29	.02
Alcohol Use Problems										
B-YAACQ	5.14 (0.83)	4.80 (0.83)	3.24 (0.87)	4.11 (0.87)	2.71 (0.88)	3.21 (0.87)	.40	.14	.51	.33

Note. BSQ = Body Shape Questionnaire; BYAACQ = Brief Young-Adult Alcohol Consequences Questionnaire; DMS = Drive for Muscularity; EDI Bulimia = Eating Disorder Inventory Bulimia subscale; EDI DT = Eating Disorder Inventory Drive for Thinness subscale; EDE-Q Bulimic sx = Eating Disorder Examination Questionnaire - Bulimic Composite; MBAS – Body Fat = Male Body Attitudes Scale – Body Fat subscale; MBAS – Muscularity = Male Body Attitudes Scale – Muscularity subscale; PANAS NA = Positive and Negative Affect Schedule – Negative Affect subscale; PSPS – Lean = Perceived Sociocultural Pressures Scale – Lean subscale; PSPS – Muscularity = Perceived Sociocultural Pressures Scale – Muscularity subscale; SATAQ-General = Sociocultural Attitudes Towards Appearance Questionnaire – Internalization General subscale; SOQ – Partner = Self Objectification Questionnaire – Partner subscale; SOQ – Self = Self Objectification Questionnaire – Self subscale. * $p < .05$, ** $p < .01$, *** $p < .001$ between conditions at each time point.

Table 3

HLM Estimates for Fixed Effects and Variance Components for Primary Outcome Variables

Parameter	Fixed Effects							Variance	
	<i>Intercept</i>	<i>Time</i>	<i>Condition</i>	<i>Group</i>	<i>Time* Condition</i>	<i>Time* Time</i>	<i>Time*Time* Condition</i>	<i>Within Person</i>	<i>Intercept</i>
	Y (SE)	Y (SE)	Y (SE)	Y (SE)	Y (SE)	Y (SE)	Y (SE)	Y (SE)	Y (SE)
Body Dissatisfaction									
BSQ	99.87*** (5.52)	-6.07*** (0.83)	-4.89 (7.80)	-	5.03*** (1.16)	0.15*** (0.02)	-0.12*** (0.03)	248.21*** (31.27)	724.04*** (136.68)
MBAS–Body Fat	3.99*** (0.21)	-0.16*** (0.03)	0.04 (0.30)	-	0.10** (0.04)	0.00*** (0.00)	-0.00* (0.00)	0.24*** (0.03)	1.29*** (0.23)
MBAS–Muscularity	3.26*** (0.34)	-0.12*** (0.03)	0.84* (0.35)	0.12* (0.05)	0.06 (0.04)	0.00*** (0.00)	-0.00 (0.00)	0.23*** (0.03)	0.83*** (0.15)
Drive for Thinness & Muscularity									
EDI DT	16.82*** (1.18)	-0.87*** (0.16)	0.14 (1.67)	-	0.71** (0.21)	0.02*** (0.00)	-0.02** (0.01)	8.54*** (1.08)	37.48*** (6.81)
DMS	2.97*** (0.31)	-0.13*** (0.03)	0.36 (0.32)	0.09† (0.04)	0.13** (0.04)	0.00*** (0.00)	-0.00** (0.00)	0.27*** (0.03)	0.63*** (0.12)
Body-Ideal Internalization									
SATAQ-General	30.21*** (1.53)	-1.48*** (0.28)	-2.48 (2.17)	-	1.30** (0.40)	0.04*** (0.01)	-0.03** (0.01)	28.80*** (3.68)	41.40*** (8.87)
Dietary Restraint									
EDE-Q Restraint	2.07*** (0.25)	-0.26*** (0.05)	0.06 (0.36)	-	0.17* (0.07)	0.01*** (0.00)	-0.00* (0.00)	0.83*** (0.10)	1.04*** (0.23)
Bulimic Symptoms									
EDE-Q Bulimic symptoms	8.78*** (1.13)	-0.95*** (0.18)	1.39 (1.59)	-	0.73** (0.25)	0.02*** (0.00)	-0.02** (0.01)	11.14*** (1.41)	29.09*** (5.56)
EDI Bulimia	14.81*** (0.93)	-0.60*** (0.14)	-1.01 (1.32)	-	0.49* (0.20)	0.14*** (0.00)	-0.01* (0.01)	7.27*** (0.92)	20.44*** (3.89)
Negative Affect									
PANAS NA	21.60*** (1.21)	-0.82*** (0.21)	1.37 (1.71)	-	0.55 (0.29)	0.02** (0.01)	-0.01 (0.01)	15.38*** (1.97)	29.89*** (6.12)
Self/Other Objectification									
SOQ-Self	3.57 (2.03)	-1.52*** (0.40)	-0.73 (2.87)	-	1.42* (0.56)	0.04*** (0.01)	-0.03* (0.01)	56.58*** (7.15)	63.39*** (14.25)
SOQ-Partner	1.79 (1.90)	-1.01** (0.37)	-0.57 (2.69)	-	1.24* (0.52)	0.02* (0.01)	-0.03* (0.01)	49.75*** (6.31)	55.87*** (12.65)

Table 3 (continued)

Parameter	Fixed Effects						Variance		
	<i>Intercept</i>	<i>Time</i>	<i>Condition</i>	<i>Group</i>	<i>Time* Condition</i>	<i>Time* Time</i>	<i>Time*Time* Condition</i>	<i>Within Person</i>	<i>Intercept</i>
	Y (SE)	Y (SE)	Y (SE)		Y (SE)	Y (SE)	Y (SE)	Y (SE)	Y (SE)
Social Pressures									
PSPS-Lean	2.62*** (0.17)	-0.03 (0.03)	-0.15 (0.24)	-	0.04 (0.04)	0.00 (0.00)	-0.00 (0.00)	0.25*** (0.03)	0.68*** (0.13)
PSPS-Muscularity	2.65*** (0.17)	-0.00 (0.02)	-0.18 (0.24)	-	0.01 (0.03)	-0.00 (0.00)	0.00 (0.00)	0.20*** (0.03)	0.76*** (0.14)
Alcohol Use Problems									
B-YAACQ	5.52*** (0.90)	-0.39* (0.16)	-0.59 (1.27)	-	0.25 (0.22)	0.01* (0.00)	-0.01 (0.01)	8.69** (1.10)	16.16*** (3.29)

Note. BSQ = Body Shape Questionnaire; B-YAACQ = Brief-Young Adult Alcohol Consequences Questionnaire; DMS = Drive for Muscularity; EDI Bulimia = Eating Disorder Inventory Bulimia subscale; EDI DT = Eating Disorder Inventory Drive for Thinness subscale; EDE-Q Bulimic symptoms = Eating Disorder Examination Questionnaire - Bulimic Composite; MBAS – Body Fat = Male Body Attitudes Scale – Body Fat subscale; MBAS – Muscularity = Male Body Attitudes Scale – Muscularity subscale; PANAS NA = Positive and Negative Affect Schedule – Negative Affect subscale; PSPS – Lean = Perceived Sociocultural Pressures Scale – Lean subscale; PSPS – Muscularity = Perceived Sociocultural Pressures Scale – Muscularity subscale; SATAQ-General = Sociocultural Attitudes Towards Appearance Questionnaire – Internalization General subscale; SOQ – Partner= Self Objectification Questionnaire – Partner subscale; SOQ – Self = Self Objectification Questionnaire – Self subscale. † $p=.05$, * $p<.05$, ** $p<.01$, *** $p<.001$.

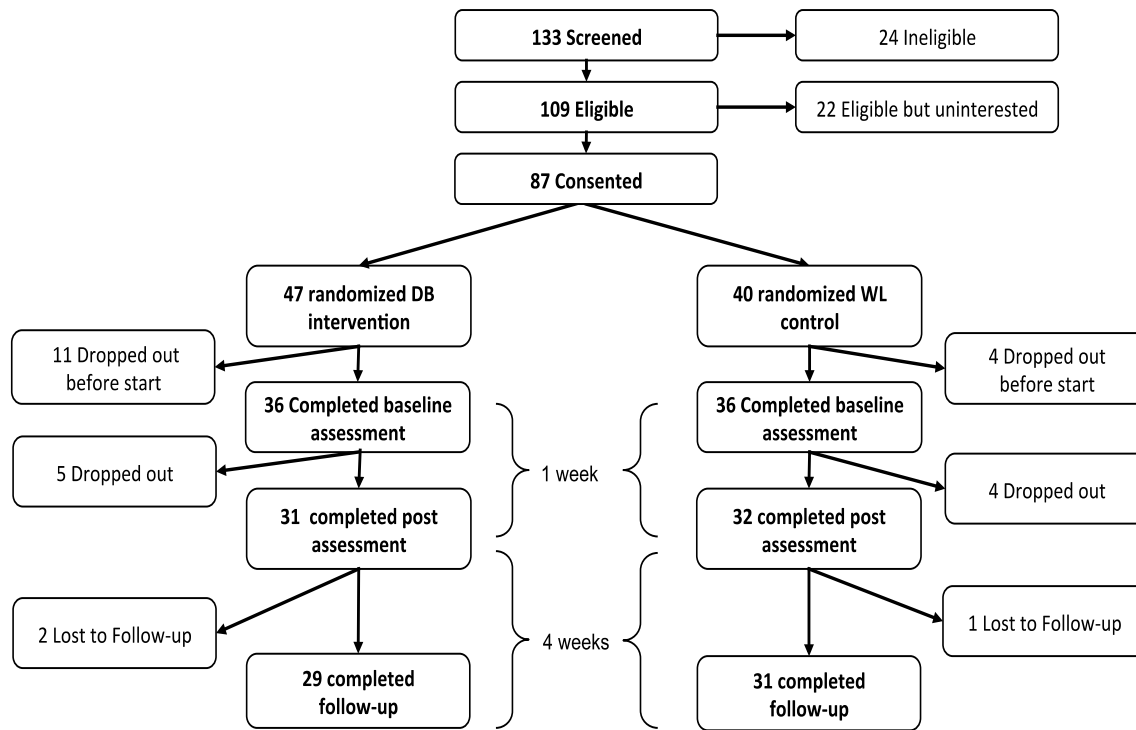


Figure 1. Overview and Participant Flow

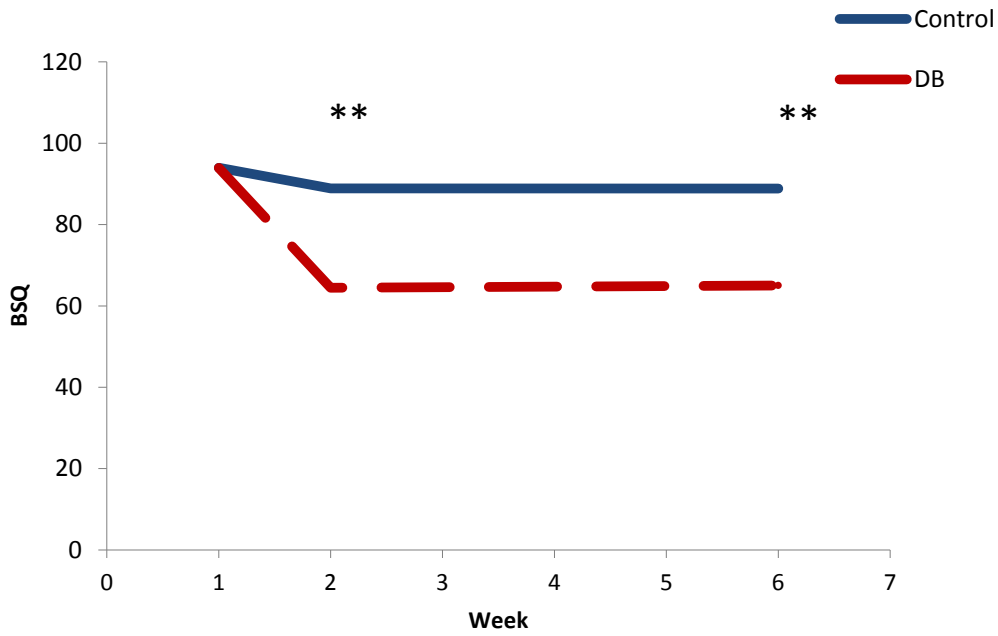


Figure 2. Comparing Conditions over Time on Body Shape Questionnaire Scores

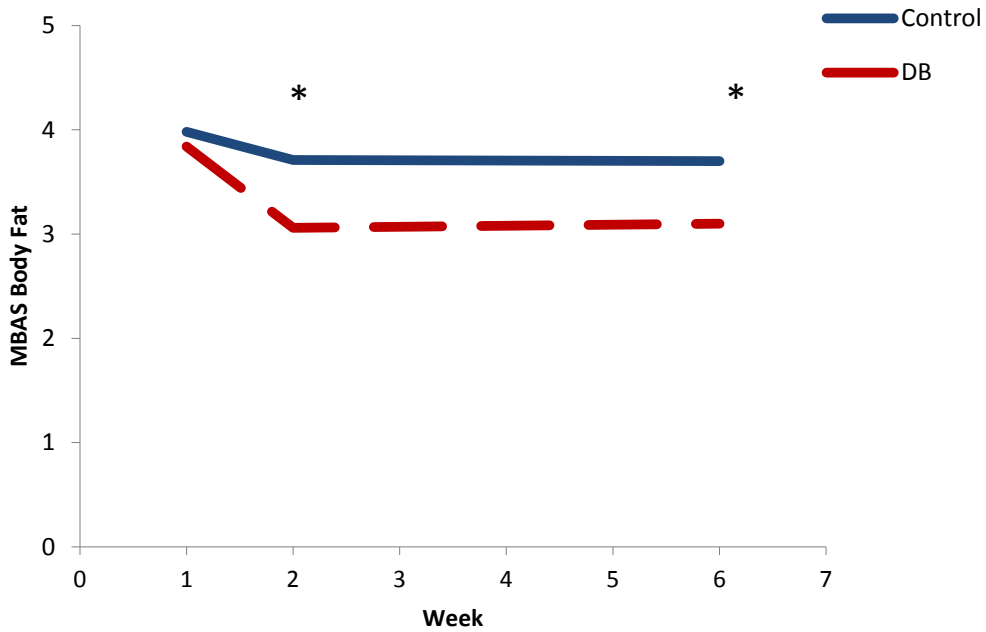


Figure 3. Comparing Conditions over Time on MBAS – Body Fat Scores

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

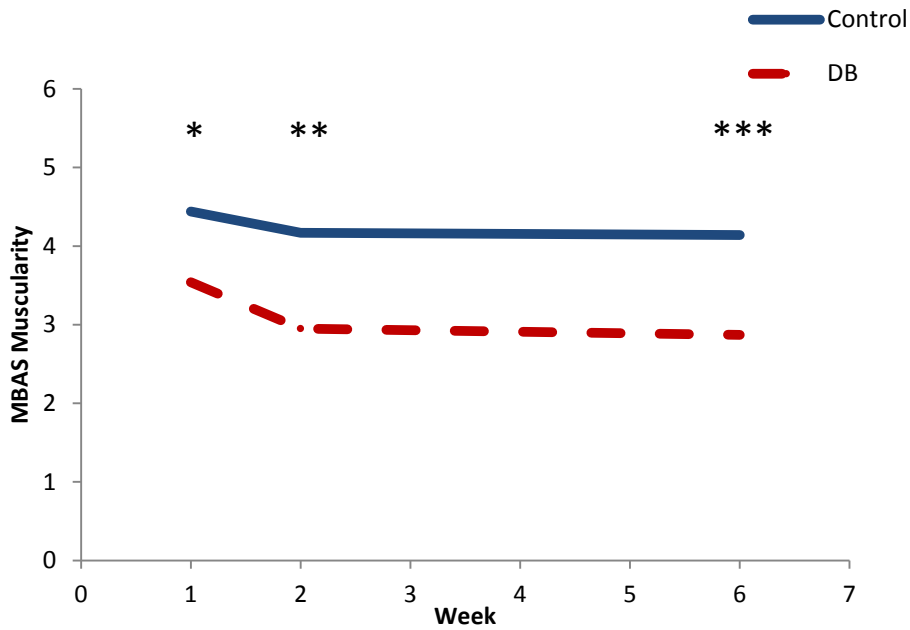


Figure 4. Comparing Conditions over Time on MBAS – Muscularity Scores

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

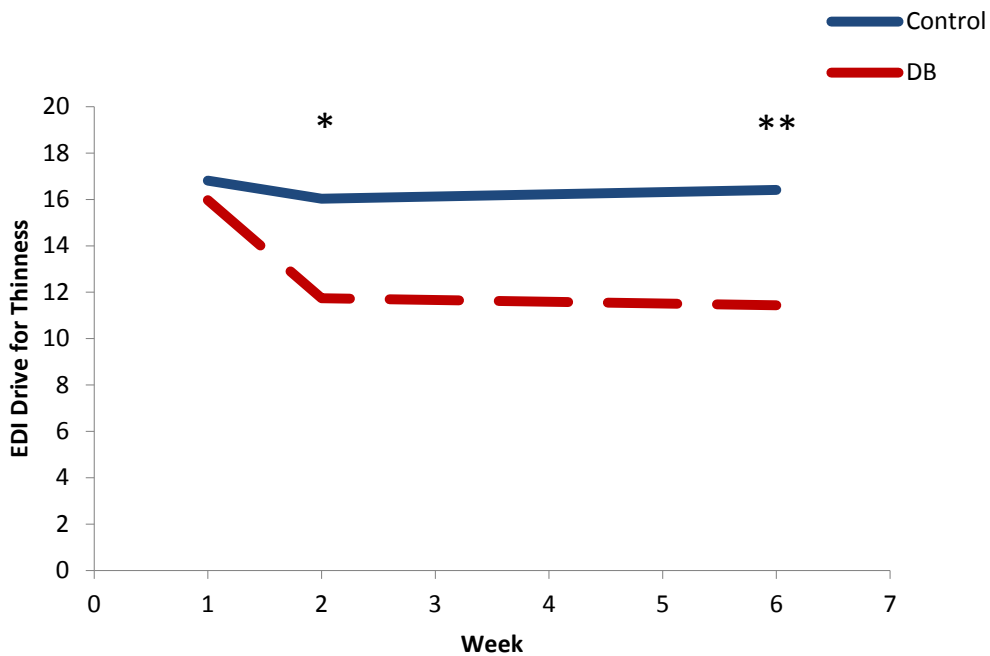


Figure 5. Comparing Conditions over Time on EDI Drive for Thinness Scores

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

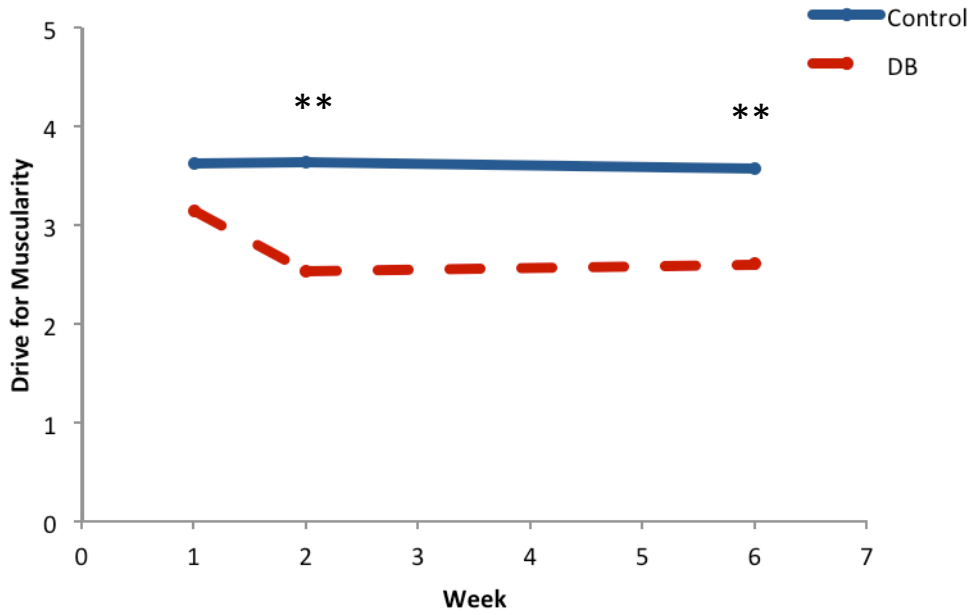


Figure 6. Comparing Conditions over Time on Drive for Muscularity Scores

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

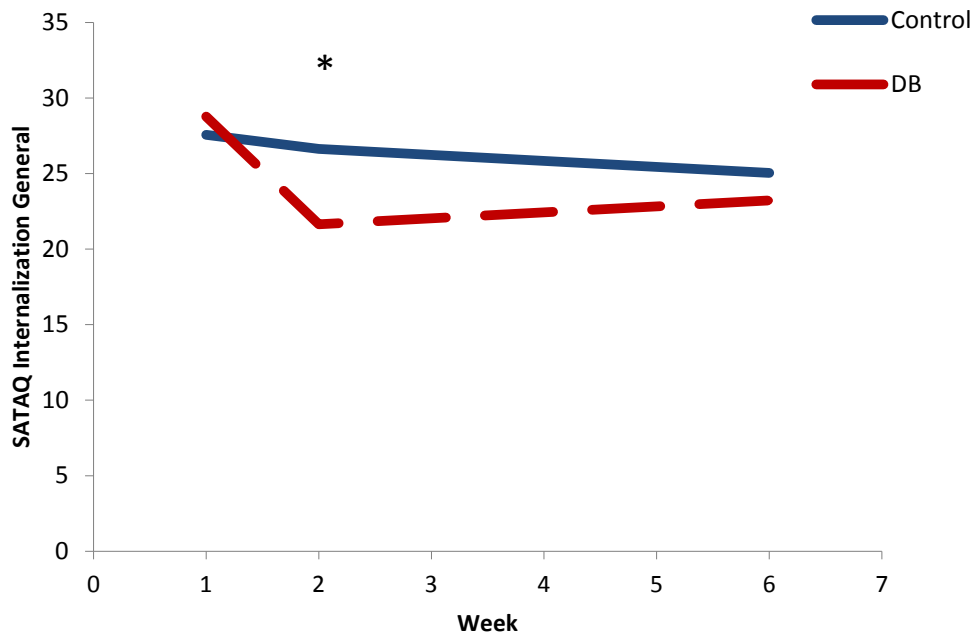


Figure 7. Comparing Conditions over Time on SATAQ – Internalization General Scores

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

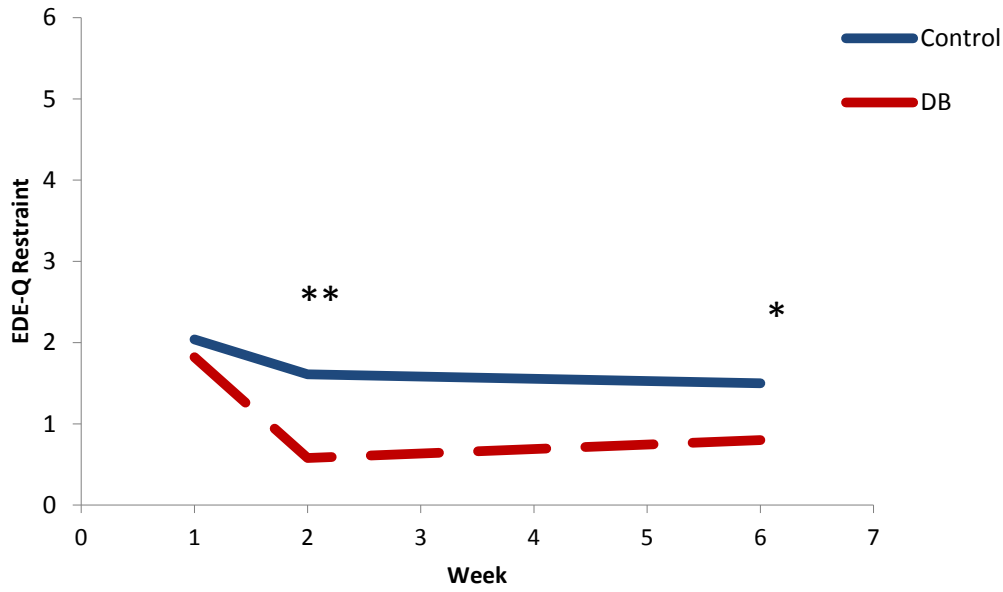


Figure 8. Comparing Conditions over Time on EDE-Q Restraint Scores

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

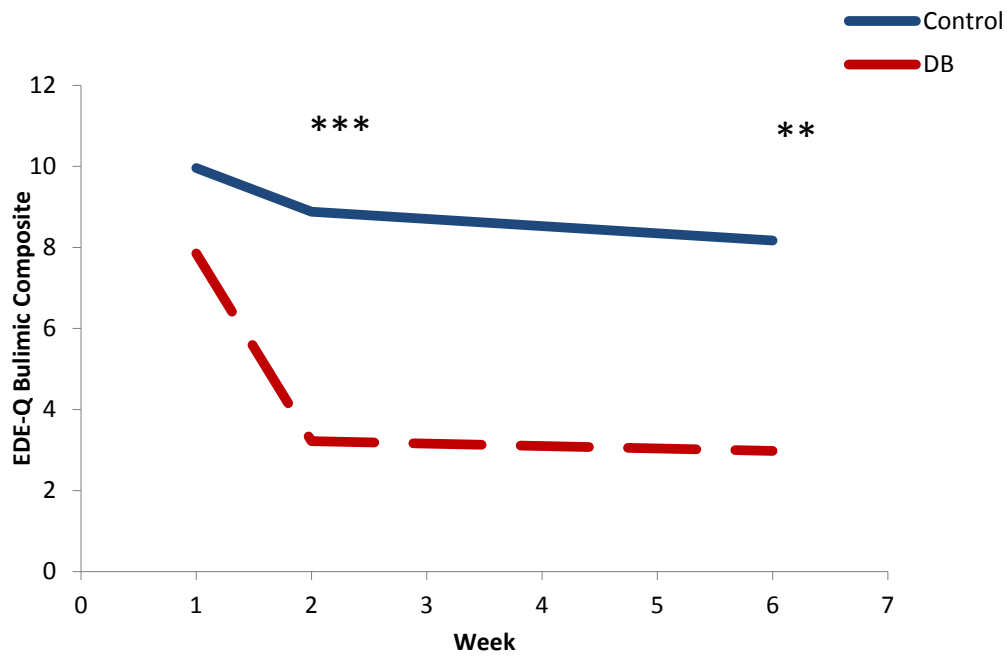


Figure 9. Comparing Conditions over Time on the EDE-Q Bulimic Composite

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

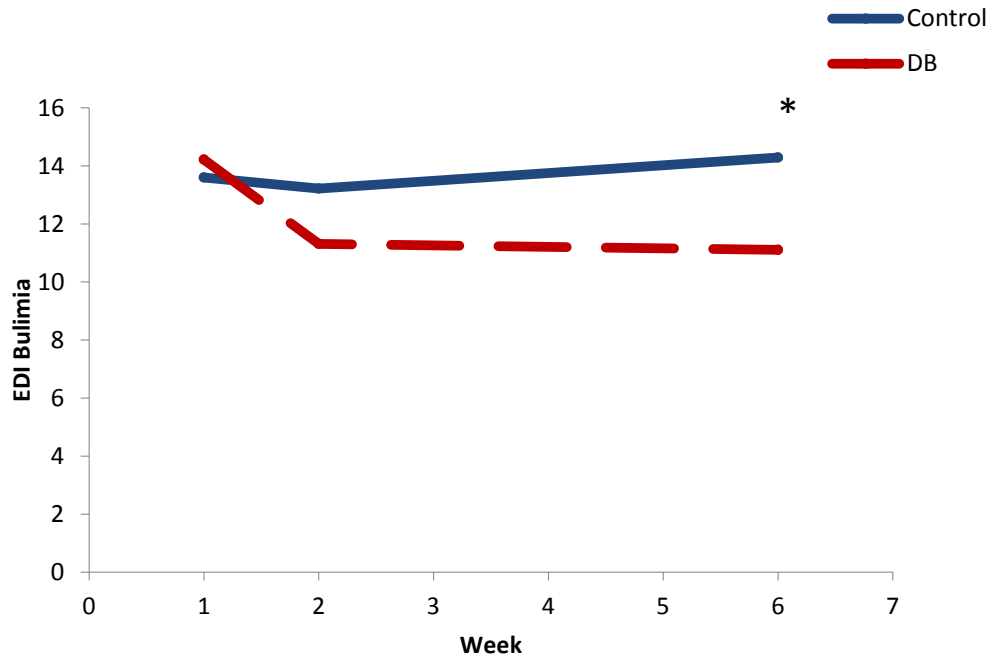


Figure 10. Comparing Conditions over Time on EDI Bulimia

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

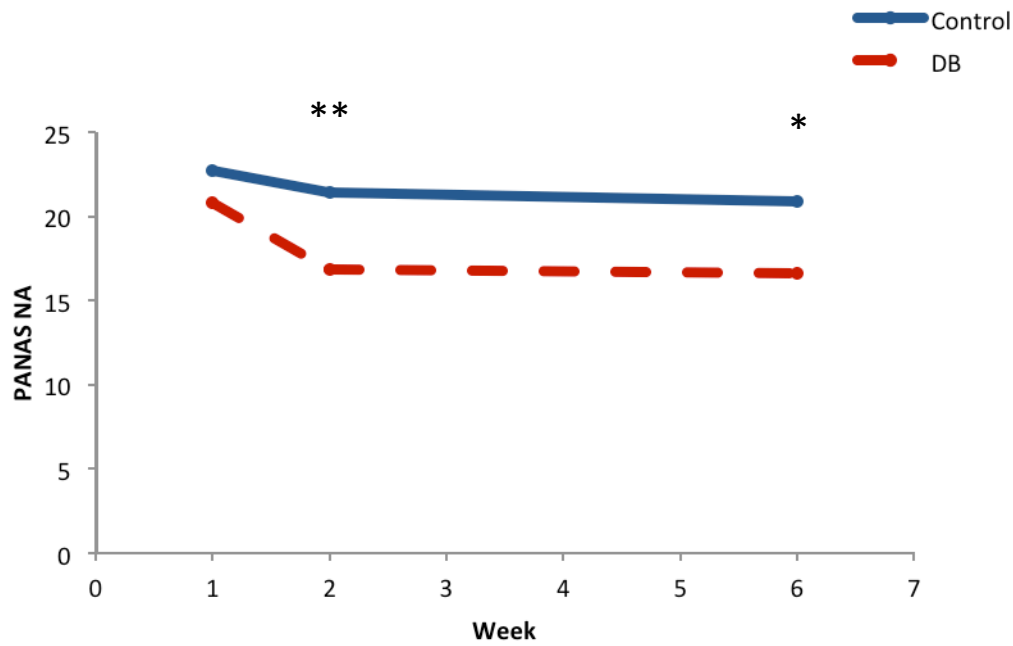


Figure 11. Comparing Conditions over Time on PANAS NA

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

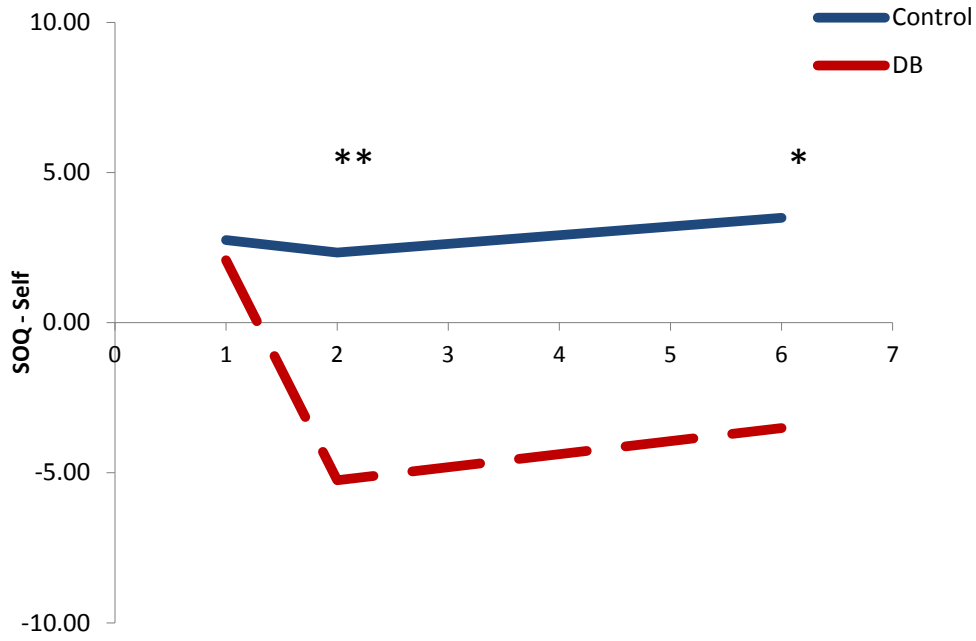


Figure 12. Comparing Conditions over Time on SOQ- Self Scores

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

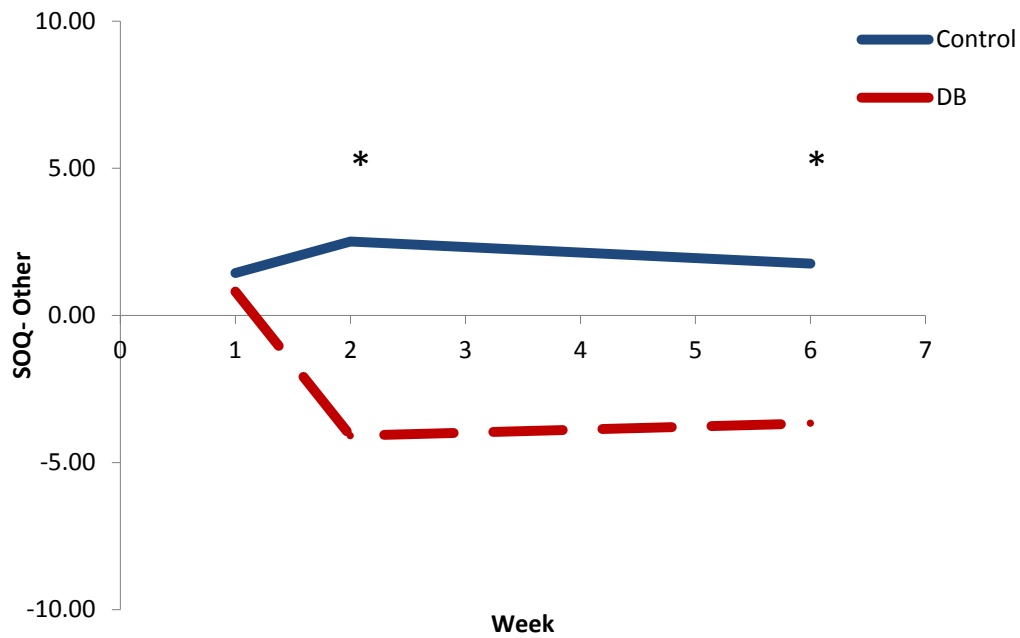


Figure 13. Comparing Conditions over Time on the SOQ-Partner Scores

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

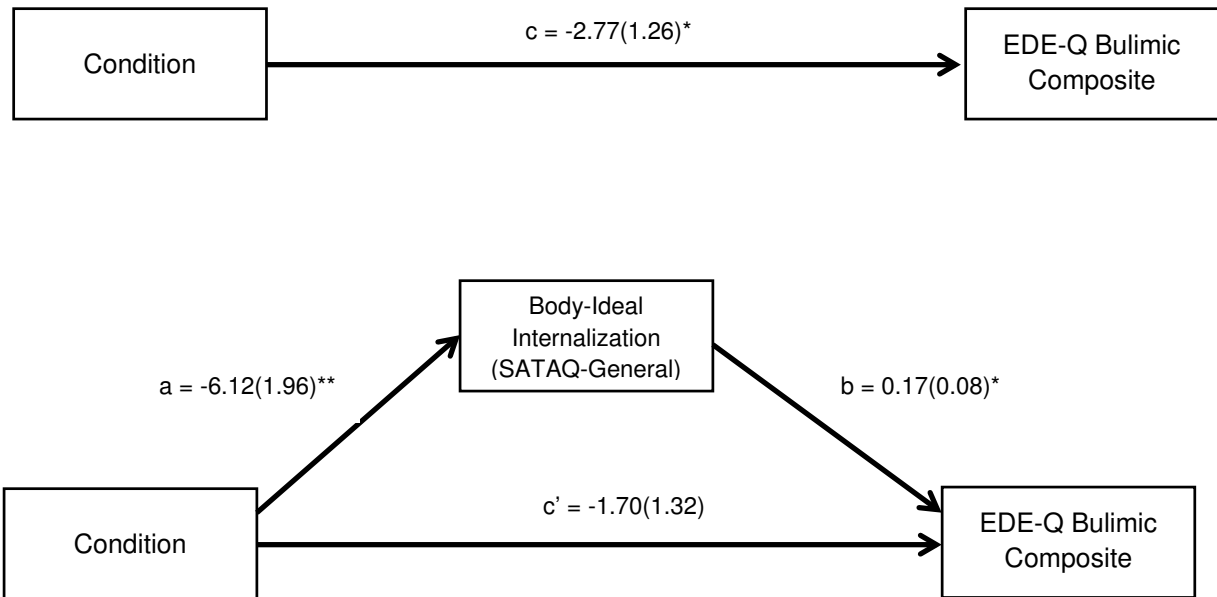


Figure 14. Mediation Analysis of the Relationship between Condition and Bulimic Symptoms, Measured by the EDE-Q Bulimic Composite. The top figure represents the total effect of condition on bulimic symptoms. The bottom figure represents the direct effect of condition and the indirect effect of body-ideal internalization.

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

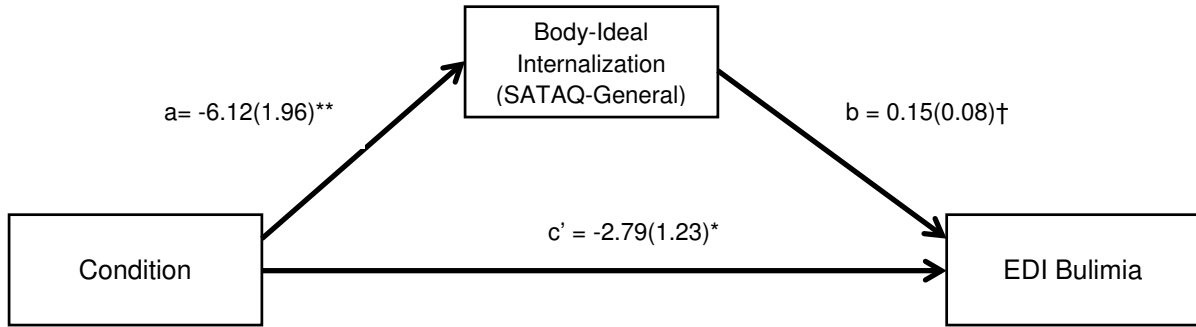
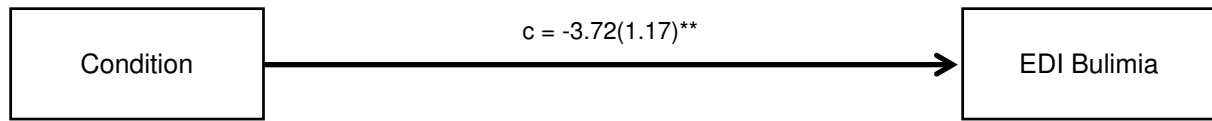


Figure 15. Mediation Analysis of the Relationship between Condition and Bulimic Symptoms, Measured by the EDI Bulimia Subscale. The top figure represents the total effect of condition on bulimic symptoms. The bottom figure represents the direct effect of condition and the indirect effect of body-ideal internalization

† $p = .05$, * $p < .05$, ** $p < .01$, *** $p < .001$.

APPENDIX A

HUMAN SUBJECTS APPROVAL FORMS

The Florida State University
Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM
Date: 10/23/2012

To: Tiffany Brown
Dept.: PSYCHOLOGY DEPARTMENT

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
Reducing Eating Disorder Risk Factors Among Bisexual and Gay College-Aged Males: A Randomized Efficacy Trial

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 10/10/2012. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 10/9/2013 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is FWA00000168/IRB number IRB00000446.

Cc: Pamela Keel, Advisor
HSC No. 2012.8938

The Florida State University
Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 9/13/2013

To: Tiffany Brown
Dept.: PSYCHOLOGY DEPARTMENT

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research
Reducing Eating Disorder Risk Factors Among Bisexual and Gay College-Aged Males: A Randomized
Efficacy Trial

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 9/10/2014, you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc: Pamela Keel, Advisor
HSC No. 2013.11130

The Florida State University
Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 9/11/2014

To: Tiffany Brown

Dept.: PSYCHOLOGY DEPARTMENT

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research
Reducing Eating Disorder Risk Factors Among Bisexual and Gay College-Aged Males: A Randomized
Efficacy Trial

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 9/9/2015, you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:
HSC No. 2014.13400

APPENDIX B

INFORMED CONSENT FORM

**FLORIDA STATE UNIVERSITY
DEPARTMENT OF PSYCHOLOGY**

INFORMED CONSENT FORM

You are invited to participate in a research study of the efficacy of a positive body image program. You were selected as a possible participant because you volunteered from the psychology subject pool or a public advertisement. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Tiffany A. Brown, M.S., in the FSU Department of Psychology and represents her doctoral dissertation. She will work in consultation on all aspects of the project with her major advisor, Pamela K. Keel, Ph.D., Professor of Psychology.

Purpose of the research

The purpose of this study is to examine the efficacy of an intervention aimed at promoting a positive body image and reducing eating disorder risk factors. We are also interested in assessing whether this intervention has the potential to prevent future symptoms of eating problems. The broader goal of this research is to identify factors that may help us better understand the prevention of eating disorders and develop more effective treatments for these problems. In addition, as new questions emerge, data from this study may be used to inform other important questions about eating disorders and related problems.

Study Procedures

If you agree to be in this study, you will be randomized into either a *positive body image intervention condition* or a *waitlist control condition*. You will be notified of which condition you have been randomized into via e-mail after signing the consent.

If you are randomized into the *intervention condition*, we would ask you to do the following:

1. First Appointment: Complete baseline questionnaires that ask detailed questions about affiliation within the gay community, eating related behaviors, body image, anxiety, and mood. You will be free to skip any questions that you would prefer not to answer. Participate in session 1 of the group body image program. This will involve discussion and participation in various activities about the "body-ideal". Including assessments, this visit should take no more than 2.5 hours to complete.
2. Between-session Homework Assignments: Brief between-session activities will be assigned at the end of the session. All together, these assignments should take no longer than 30 minutes to complete.
3. Second Appointment: Participate in session 2 of the group body image program. This will involve discussion and participation in various activities about the "body-ideal". Post-intervention, complete the same battery of questionnaires as described above. Including assessments, this visit should take no more than 2.5 hours to complete.
4. Post-session Assignments: After session 2, complete an affirmation exercise of your choosing. The assignment should take no longer than 30 minutes to complete.
5. Third appointment (online): Four weeks after the second appointment, complete the same battery of questionnaires as described above. This appointment will be completed online and should take no longer than 30 minutes.

If you are randomized into the *waitlist control condition*, we would ask you to do the following:

1. First Appointment (online): Complete baseline questionnaires online that ask detailed questions about affiliation within the gay community, eating related behaviors, body image, anxiety, and mood. You will be free to skip any questions that you would prefer not to answer and

questionnaires should take no longer than 30 minutes to complete.

2. Second Appointment (online): One week after completing the baseline questionnaires you will be prompted via e-mail to complete the same battery of questionnaires online as described above.
3. Third appointment (online): Four weeks after the second appointment, you will be prompted via e-mail to complete the same battery of questionnaires as described above.

After completing the study in the waitlist condition, you will have the option to participate in the positive body image intervention, if you so choose.

Audio Recording/Video Recording

One aspect of this study involves making audio recordings of you. Audiotapes of the group sessions are used only for the purpose of checking that group facilitators are adhering to the program materials. Taped sessions are labeled by group number only and do not use first or last names. Only trained interventionists will have access to audiotapes from this study, Recordings will be destroyed following completion of review for facilitator adherence.

Yes No I give you permission to make audio recordings during this study.

Risks of Study Participation

This study has the following risks:

1. Completing questionnaires may involve recalling sad or upsetting memories. Some of the questions may be sensitive, and you can decide not to answer any questions you wish.
2. Discussions and activities challenging the “body ideal” within the intervention may be distressing to some participants. A list of names and phone numbers of clinics and mental health professionals will be provided to participants.
3. Given that the intervention sessions will be conducted in groups, it is possible that personal information disclosed within the sessions could be released to unauthorized personnel by other group members. For this reason, **it is essential that all participants respect other group members’ confidentiality, and do not disclose any information about the identity of fellow group members or personal information discussed within sessions outside of the group context.**

Benefits of Study Participation

Participants in the intervention condition may benefit from participating in an intervention that aims to promote a healthy body image and decrease disordered eating. Additionally, we hope that, in the future, other people might benefit from this study because results may help contribute to improved prevention of eating disorders.

Alternatives to Study Participation

For individuals in the psychology subject pool, the alternatives to study participation are that you may choose to participate in a study other than this one for course credit or you may complete an alternative assignment for credit, as described in your class. An alternative to participating in this study for all participants is not to participate at all.

Study Compensation

You will be compensated for your time and inconvenience in completing the study questionnaires. Compensation will be disbursed upon the successful completion of questionnaires at baseline, post-intervention, and 4-week follow-up assessment. You will have the choice of either receiving monetary compensation or course credits through the online psychology subject pool. For those who elect to receive monetary compensation, regardless of whether you are randomized to the intervention or waitlist control condition, disbursement will occur at three points: \$5 after completion of the first baseline questionnaires, \$5 after completion of the post-intervention questionnaires, and \$10 after completion of the follow-up questionnaire. You will be asked to complete a reimbursement form, including your name and address.

For those who elect to receive course credit through the online subject pool, you will receive credits that

will be prorated based on rate of completion. If you are randomized to the intervention condition you will receive credit compensation to reflect your total time spent in the study, up to a total of 5.5 credits: 2.5 credits for participation in session 1 and baseline assessments, 2.5 credits for participation in session 2 and post-intervention assessments, and .5 credits for the 4-week follow-up. If you are randomized to the waitlist control condition will receive up to a total of 1.5 credits: .5 credits for baseline assessments, .5 credits for post-intervention assessments, and .5 credits for 4-week follow-up assessments.

Confidentiality

The records of this study will be kept private and confidential, to the extent allowed by law. In any publications or presentations, we will not include any information that will make it possible to identify you as a subject. In addition, research records that include sensitive information will be identified by a unique identification number, and records that link your name to your identification number will be destroyed after study completion.

Voluntary nature of the study

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions

The researchers conducting this study are Dr. Pamela K. Keel and Tiffany A. Brown. If you do not understand any of the study procedures, risks, or benefits or if you have any other questions, please contact Tiffany Brown at 850-xxx-xxxx or by e-mail at xxx@psy.fsu.edu prior to signing this consent form. You may also contact Dr. Keel at 850-xxx-xxxx or by e-mail at xxx@psy.fsu.edu.

If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher(s), you are encouraged to contact the FSU IRB at: 850-644-8633. You may also contact this office at: humansubjects@magnet.fsu.edu, or by writing or in person at 2010 Levy Street, Research Building B, Suite 276, FSU Human Subjects Committee, Tallahassee, FL 32306-2742.

Additionally, you may contact any of the following organizations if you are feeling distressed:
FSU Psychology Clinic: 850-644-3006 or FSU Student Counseling Center: 850-644-2004

Statement of Consent

I have read the above information, and by signing this consent form I am confirming that I understand the nature of the research project and would like to participate in the study. I have asked questions and have received answers. I understand that my participation is voluntary and that I retain the right to withdraw my consent at any time without penalty.

Type Your Full Name Here

Type Today's Date

Please print and save a copy of this form for your records.

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BIOGRAPHICAL SKETCH

Tiffany A. Brown was born in San Diego, CA in 1986. Tiffany graduated *summa cum laude* and *Phi Beta Kappa* from Villanova University with a Bachelor of Arts degree in Psychology in 2008. After graduating from Villanova, Tiffany sought out a position as a Research Associate at the University of California, San Diego (UCSD) Eating Disorders Research and Treatment Program, under the direction of Dr. Walter Kaye, M.D. At UCSD, she served as recruitment coordinator for several of Dr. Kaye's NIMH-funded R01 studies on the neurobiology of anorexia nervosa and bulimia nervosa. While at UCSD, she also volunteered as a family liaison for a NIMH-funded, multi-site clinical trial of Family-Based Therapy for adolescents with anorexia nervosa to gain further experience with treatment research. Tiffany received her Masters of Science degree from Florida State University in 2010. Her research interests include eating disorder classification and assessment, investigating sociocultural risk factors for eating disorders in males, and the application and development of novel methods in the prevention and treatment of eating disorders.