INTEGRATING THIN-IDEAL INTERNALIZATION AND SELF-OBJECTIFCATION WITHIN EATING DISORDER PREVENTION FOR WOMEN

A Thesis

by

ASHLEY MICHELLE KROON VAN DIEST

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

December 2011

Major Subject: Psychology

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Approved by:

Chair of Committee,	Marisol Perez
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ABSTRACT

Integrating Thin-Ideal Internalization and Self-Objectification within Eating Disorder Prevention for Women. (December 2011)

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A cross-sectional and longitudinal examination of thin-ideal internalization and self-objectification was conducted within the context of an eating disorder prevention program. The sample consisted of 177 undergraduate women enrolled in a sorority between the ages of 18 and 22 who participated in a dissonance-based eating disorder prevention program. Participants completed self-report assessments at baseline, post-intervention, 5-month, and 1-year follow-up. Measures included the Ideal-Body Stereotype Scale-Revised, Self-Objectification Questionnaire, Body Shape Questionnaire, and Eating Disorder Examination-Questionnaire. A cross-sectional path analysis indicated that thin-ideal internalization and self-objectification predict each other and both predict body dissatisfaction, which in turn, predicts eating disorder symptoms. A longitudinal examination of the prevention program indicated that participants showed significant reductions in thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms after participating in a cognitive dissonance eating disorder prevention program. Significant reductions of all symptoms were maintained at 1-year follow-up, with the exception of self-

objectification, which had a significant reduction up to the 5-month assessment. A longitudinal path analysis indicated that post-intervention thin-ideal internalization and self-objectification predicted body dissatisfaction at 5-month follow-up assessments which in turn predicted eating disorder symptoms at this same time point. This model was replicated for 1-year follow-up body dissatisfaction and eating disorder symptoms with the exception of the direct path from self-objectification to body dissatisfaction. Assessment of temporal sequence of change between self-objectification and thin-ideal internalization revealed that neither variable significantly predicted meaningful change in the other variable. Finally, individuals who showed meaningful change in self-objectification before showing meaningful reduction in thin-ideal internalization from baseline to post-intervention assessments had greater reductions in eating disorder symptoms 1-year following the intervention. Collectively, these results suggest that eating disorder prevention programs should focus on targeting both thin-ideal internalization and self-objectification simultaneously to increase further the reduction of eating disorder symptoms.

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INTRODUCTION

Eating disorders are one of the most common psychiatric problems experienced by females in the United States (Lewinsohn, Striegel-Moore, & Seeley, 2000) and are characterized by serious eating disturbances, such as fasting, purging, and binge eating, as well as excessive concern about body shape and weight. They are commonly associated with a number of medical complications, including diabetes, hypertension, loss of teeth enamel, osteoporosis, decreased kidney functioning, gastrointestinal bleeding, malnutrition, bowel disease, infertility, stress fractures, obesity and cardiac arrest (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004; Keel et al., 2003; Mitchell & Crow, 2006; Striegel-Moore, Leslie, Petrill, Garvin, & Rosenheck, 2000). Eating disorders are also associated with psychosocial functional impairment, and are marked by chronicity and relapse (Newman et al., 1996; Thompson & Stice, 2001). Increased rates of mortality, suicide, future risk for onset of obesity, substance abuse, and mood, anxiety, and personality disorders are also seen in individuals with eating disorders (Becker, Grinspoon, Klibanski, & Herzog, 1999; Franko & Keel, 2006; Hudson, Hiripi, Pope, & Kessler, 2007; Johnson, Cohen, Kasen, & Brook, 2002; Woodside et al., 2001).

Prevalence rates of clinical and subclinical levels of eating disorders and associated risk factors have increased over the past several decades and are affecting

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individuals at younger ages (Feingold & Mazzella, 1998; Muth & Cash, 1997; Park, 2007; Stice, 1994; Striegel-Moore & Franko, 2002). Individuals are classified as having subclinical eating disorders if they are experiencing some symptoms of eating disorders, but do not have enough symptoms to be formally diagnosed with a clinical eating disorder. Approximately 61% of young adult females experience subclinical eating disorders, including binging and purging, and subclinical bulimia nervosa (Mintz & Betz, 1988), and 80-91% report dieting (Striegel-Moore, Silberstein, Grunberg, & Rodin, 1990). Males are also increasingly experiencing body dissatisfaction and subclinical eating disorders (Drummond, 2002; O'Dea & Abraham, 2002), and 5-10% of all individuals with clinical eating disorders are male (Carlat & Camargo, 1991; Lucas, Beard, O'Fallon, & Kurland, 1991). This increase in prevalence rates combined with an increase in societal pressures placed on individuals to be thin (Wilson & Eldredge, 1992) and a decrease in the ideal body weight promoted by society evidenced by decreases in bust-to-waist ratios for actresses and models over the past few decades (Silverstein, Perdue, Peterson, & Kelly, 1986) and decreases in the weights of Playboy centerfolds and Miss America contestants since 1959 (Garner, Garfinkel, Schwartz, & Thompson, 1980; Wiseman, Gray, Mosimann, & Ahrens, 1992), makes individuals more vulnerable to experiencing eating disorder risk factors such as thin-ideal internalization, self-objectification, and body dissatisfaction (Stice & Shaw, 1994), further increasing the chances of the development of eating disorders (Tiggemann, 2011).

Since research indicates that subclinical levels of eating disorders are more prevalent than clinical eating disorders and can be just as impairing (Hoffman & Brownell, 1997; Stice, Marti, Shaw, & Jaconis, 2009; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999), the prevention of subclinical eating disorders is equally as important as the prevention of diagnosable eating disorders. Subclinical eating disorders often progress to clinical eating disorders (Stice, Marti, Spoor, Presnell, & Shaw, 2008), and of the individuals who experience clinical or subclinical levels of eating disorders and their negative consequences, less than 25% will receive treatment (Hudson et al., 2007; Johnson et al., 2002). For those who do receive treatment, treatment effects are limited with only 30% experiencing long-lasting symptom remission (Fairburn, 2002; Fairburn et al., 2009; Wilson, Becker, & Heffernan, 2003), and approximately 20% drop out (Fairburn 2002). Treatment for eating disorders is also relatively expensive, and most insurance companies will not fund inpatient treatment for individuals with severe eating disorders (Shaw, Stice, & Becker, 2009). Therefore, more efforts have been devoted to the development of effective programs for the prevention of eating disorders.

While eating disorder treatment programs have produced limited success, evaluations of current prevention programs are providing encouraging results. For example, a meta-analysis of eating disorder prevention programs revealed that 51% of eating disorder prevention programs reduced risk factors associated with disordered eating, and 29% reduced current or future eating disorder symptoms (Stice, Shaw, & Marti, 2007). Some programs have produced reductions in eating disorder symptoms and associated risk factors that persisted through follow-up assessments. For example,

Becker and colleagues (2005) evaluated the effects of a dissonance based prevention program in a college sorority and found that significant reductions in eating disorder symptoms and associated risk factors including body dissatisfaction and thin-ideal internalization were maintained at a 1-year follow-up assessment. These results from the same program conducted within a different sorority have been replicated by other researchers (Perez, Becker, & Ramirez, 2010). Other programs have reduced the risk of future onset of clinical and subclinical eating disorders (Stice & Shaw, 2004). Therefore, the success of current prevention programs in non-clinical and subclinical populations combined with the lack of success of eating disorder treatment programs provides additional support for the importance of effective prevention programs.

Eating Disorder Development

The majority of women in today's society are dissatisfied with their bodies, placing them at greater risk for developing eating disorders (Polivy & Herman, 2002). Body dissatisfaction has been associated with a number of negative psychological consequences, highlighting the importance of understanding the process by which women come to be dissatisfied with their bodies. Relevant to this study, there are two empirically supported sociocultural models that address this process. One of these models, outlined by self-objectification theory, indicates that self-objectification predicts body dissatisfaction and disordered eating (Noll & Frederickson, 1998), while the other, the dual pathway model, indicates that thin-ideal internalization predicts body dissatisfaction and disordered eating (Stice, 1994). Since both models have extensive empirical support and have been found to predict body dissatisfaction and eating

disorder symptoms separately, it is important to explore how these models can potentially be integrated. This integration may yield important information towards increasing the effectiveness of eating disorder prevention programs.

A paucity of research has examined the integration of thin-ideal internalization and self-objectification, and no studies to date have determined their temporal sequence of change within the context of an eating disorder prevention program. The research that does exist suggests that thin-ideal internalization predicts self-objectification in the development of eating disorders. However, this research has all been cross-sectional in nature and did not examine other plausible directionality of the relationship between thin-ideal internalization and self-objectification in order to determine if self-objectification could predict thin-ideal internalization. The lack of research on the integration of these two variables in the development of eating disorder symptoms and risk factors is a limitation of current research in the field of eating disorders; understanding how the combination of these two variables influence eating disorder development would allow researchers to develop more efficacious prevention programs. Therefore, the current study examined the integration of self-objectification and thin-ideal internalization in predicting body dissatisfaction and eating disorder symptoms, and the temporal sequence of change of these two variables throughout a prevention program.

This examination was conducted in a population of undergraduate college women enrolled in a sorority, as college women are considered at an increased risk for developing eating disorders compared to same age individuals not in college (Compas,

Wagner, Slavin, & Vannatta, 1986; Rand & Kuldau, 1991). It is currently unclear if sorority members are at a higher risk than other collegiate women for developing eating disorder symptoms and risk factors (Allison & Park, 2004; Cashel, Cunningham, Landeros, Cokley, & Muhammad, 2003), with some studies indicating that sororities comprise a mixed population of individuals who evidence a range from low to very high risk levels for developing eating disorder symptoms (Becker , Ciao, & Smith 2008; Becker, Smith, & Ciao, 2005, 2006). However, the current sorority chapter that participated in this study has been identified as the chapter with the higher level of eating disorder symptoms by the National Office making this population ideal for the current study.

Self-Objectification

Objectification Theory, proposed by Fredrickson and Roberts (1997), posits that women who experience objectification (i.e., being treated or regarded as an object by others) are likely to engage in self-objectification as a result of internalizing a viewer's perspective of their bodies. Self-objectification is characterized as the habitual monitoring of physical appearance and viewing one's self as a collection of body parts. This constant monitoring of appearance is theorized to lead to appearance anxiety, body dissatisfaction and body shame, which contribute to psychological disorders such as sexual dysfunction, depression, and eating disorders (Fredrickson & Roberts, 1997).

Several studies have supported the relationship between self-objectification and body dissatisfaction and disordered eating (Greenleaf, 2005; Grippo & Hill, 2008; McKinley, 2004; Tiggemann & Lynch, 2001; Tylka & Hill, 2004). Noll and

Frederickson (1998) examined a sociocultural model of self-objectification and found that self-objectification predicts both body shame and eating disorder symptoms, and body shame also predicts eating disorder symptoms. These findings have been replicated by other researchers (Calogero, 2009; Greenleaf & McGreer, 2006; Hurt et al., 2007; Muehlenkamp & Saris-Baglama, 2002; Prichard, & Tiggemann, 2005; Tiggemann & Slater, 2001) including experimental studies where self-objectification was induced (Morry & Staska, 2001), in populations of women 18 to 68 years old (Augustus-Horvath, & Tylka, 2009), adolescent girls (Slater & Tiggemann, 2002), men (Calogero & Thompson, 2009), homosexual women (Haines et al., 2008), and international samples (Morrison & Sheahan, 2009).

According to Fredrickson and Roberts (1997), self-objectification can be conceptualized in two ways: trait self-objectification and state self-objectification. Trait self-objectification is pervasive across most contexts, with individuals who engage in trait self-objectification placing a greater value on observable characteristics such as physical attractiveness rather than non-observable traits such as physical health, coordination, and stamina (Noll & Fredrickson, 1998). State self-objectification tends to vary in different social contexts, commonly increasing in circumstances where individuals are made aware that their bodies are being observed, evaluated or objectified. This can result in anticipation of being viewed as an object leading to preoccupied with appearance (Fredrickson & Roberts, 1997). State self-objectification can be induced in experimental settings (Morry & Staska, 2001), while trait self-objectification cannot. For the current study, only trait self-objectification was assessed.

Thin-Ideal Internalization

Thin-ideal internalization has also been found to be a significant risk factor for body dissatisfaction and disordered eating. Thin-ideal internalization, or the extent to which an individual adopts socially defined ideals of attractiveness as part of their own beliefs (Thompson & Stice, 2001), is a result of pressures to attain a lean figure placed on individuals by the media, family, peers, and interpersonal encounters (Stice & Shaw, 1994). Society's proposed ideal body type is unattainable for most individuals (Cusumano & Thompson, 1997), commonly resulting in body dissatisfaction and body shame (Heinberg & Thompson, 1995), which then leads to unhealthy eating practices and disordered eating to attain this body type (Agliata & Tantleff-Dunn, 2004; Moradi & Subich, 2002; Stormer & Thompson, 1995).

The dual pathway model, developed by Stice (1994), hypothesizes that thin-ideal internalization predicts body dissatisfaction, and the relationship between body dissatisfaction and eating disorder symptoms is mediated by restrained eating and negative affect. Research has supported the dual pathway model cross-sectionally (Stice, Nemeroff, & Shaw, 1996; Stice, Ziemba, Margolis, & Flick, 1996) and longitudinally (Stice, 2001; Stice & Agras, 1998; Stice, Shaw, & Nemeroff, 1998) with one longitudinal study indicating that the model prospectively predicted the development of eating disorder symptoms in a sample of adolescent females (Stice et al., 1998). Dissonance based eating disorder prevention programs which attempt to create a state of psychological discomfort known as cognitive-dissonance about eating disorder risk factors such as the thin-ideal in an effort to reduce overall eating disorder symptoms

(more detailed information on dissonance based eating disorder prevention programs can be found on page 11) have been developed based on the dual pathway model (Stice, Mazotti, Weibel, & Agras, 2000), with research on these prevention programs providing further support for this sociocultural model (Stice, Chase, Stormer, & Appel, 2001; Stice et al., 2008; Stice, Ng, & Shaw, 2010; Stice & Shaw, 2004; Stice, Shaw, Burton, & Wade, 2006).

Integration of Self-Objectification and Thin-Ideal Internalization

While thin-ideal internalization and self-objectification share similarities such as associations with body dissatisfaction and disordered eating, resulting from internalization of some external experience or pressure, and being directly related to physical appearance, these two variables distinct constructs. Thin-ideal internalization is the internalization of a standard body ideal proposed by society, which is perpetuated by pressures from family, friends, and the media (Stice & Shaw, 1994). In contrast, self-objectification is the internalization of specific interpersonal experiences of sexual objectification that lead individuals to objectify their own bodies (Fredrickson & Roberts, 1997). This distinction is supported by correlations between self-objectification and thin-ideal internalization from previous studies which indicate that while these variables are significantly correlated, the correlation values suggest that these are in fact two distinct constructs. For example, Myers and& Crowther (2007) reported correlations between these variables as $r = 0.38$ in a sample of undergraduate college women. Morrison and Sheahan (2009) reported lower correlation values between self-objectification and thin-ideal internalization, $r = 0.25$, in a community sample of women.

Theoretically, thin-ideal internalization would commonly precede self-objectification, as societal pressures to attain the thin-ideal lead to thin-ideal internalization, which could in turn lead to the habitual monitoring of appearance that is characteristic of self-objectification as a way of critically examining one's figure to determine if they are meeting societal standards of thinness. However, it is important to note that this relationship may be specific to ethnicity, as different ethnic groups value different body types. For example, some research has indicated that African Americans typically value more full-figured body types rather than the ultra-thin body type promoted by Whites (Wilfley, Schreiber, Pike, & Striegel-Moore, 1996). While ethnic differences may exist in the development of thin-ideal internalization and self-objectification, some internalization of ideals must occur before self-objectification.

Although extensive empirical evidence supports both self-objectification theory and the dual pathway model in the development of body dissatisfaction and eating disorder symptoms, a limited number of studies have simultaneously investigated self-objectification and thin-ideal internalization and all of these studies were cross-sectional in nature. In one study, Morry and Staska (2001) examined thin-ideal internalization and state self-objectification and found that for women, exposure to beauty magazines predicted self-objectification and eating disorder symptoms and that this relationship was mediated by thin-ideal internalization. For men, exposure to fitness magazines predicted thin-ideal internalization which then predicted self-objectification. Moradi, Dirks, and Matteson (2005) expanded upon Morry and Staska's study by examining the links between sexual objectification experiences, thin-ideal internalization, body shame,

eating disorder symptoms, and trait self-objectification manifested as body surveillance. These authors found that sexual objectification experiences predicted thin-ideal internalization and self-objectification, thin-ideal internalization predicted self-objectification, body shame, and eating disorder symptoms, self-objectification predicted body shame and eating disorder symptoms, and body shame predicted eating disorder symptoms. These findings have been generalized to women suffering from eating disorders (Calogero, Davis, & Thompson, 2005), and a sample of undergraduate women in Ireland (Morrison & Sheahan, 2009). Cumulatively, the evidence from these studies suggests that thin-ideal internalization predicts both trait and state self-objectification, which in turn predicts body dissatisfaction and eating disorder symptoms. However, the research to date has all been cross-sectional in nature and has not examined other possible directionality between thin-ideal internalization and self-objectification. This relationship could potentially be reversed because individuals who engage in self-objectification may be more likely to evaluating their own physical appearance and compare themselves to others, potentially leading them to engage in thin-ideal internalization.

Dissonance Based Prevention

Dissonance based eating disorder prevention programs are one of the most extensively studied and empirically supported forms of eating disorder prevention (Stice, Shaw, Becker, & Rohde, 2008). Dissonance based interventions were developed using principles from Festinger's cognitive-dissonance theory (1957). Cognitive dissonance is a state in which incongruent thoughts, beliefs, or attitudes create psychological

discomfort or tension (Brehm & Cohen, 1962; Festinger 1957). This discomfort may motivate individuals to change their thoughts, beliefs, or attitudes in order to restore a sense of internal consistency (Beauvois & Joule, 1999). Based on this theory, dissonance based eating disorder prevention programs seek to create dissonance in individuals about eating disorder risk factors such as thin-ideal internalization and body dissatisfaction. This is accomplished through a series of verbal, written, and behavioral exercises that encourage participants to critique a particular eating disorder risk factor in order to create dissonance.

Many current dissonance eating disorder prevention programs are based on the dual pathway model (Stice, Ziemba et al., 1996), an empirically supported etiologic model which suggests that sociocultural pressures to have a thin body promote thin-ideal internalization, which predicts body dissatisfaction, negative affect, and dieting. Body dissatisfaction, negative affect and dieting in turn foster eating disorder symptoms. Therefore, many current dissonance-based eating disorder prevention programs attempt to create cognitive dissonance about the thin ideal, as it occurs early in the causal chain and can potentially lead to eating disorder symptoms. Once participants engage in counter-attitudinal activities in which they critique the thin ideal proposed by society and voluntarily take a stance against it, they are more likely to become faced with an internal conflict between their own internalized acceptance of the thin-ideal and the arguments they generated to counter the pressures to attain this thin-ideal, therefore experiencing the psychological discomfort that results from cognitive dissonance. They may then be motivated to alter their own thin-ideal internalization in order to reduce or eliminate this

discomfort. For example, participants are asked to write a one-page statement about the costs associated with attaining the thin-ideal in an effort to increase cognitive dissonance about wanting to attain the thin-ideal body type. This reduction of internalization of the thin-ideal in turn leads to decreases in other eating disorder risk factors and eating disorder symptoms. The prevention program assessed in the current study targets both thin-ideal internalization and self-objectification. Specific strategies used to target self-objectification include discussions about the short-term and long-term costs of objectification for the participant, their family, and society such as the perpetuation of sexist attitudes towards women, the development of body dissatisfaction and eating disorder symptoms in women that engage in the thin-ideal, and the difficulties that family members of individuals with eating disorders experience as a result of the disorder. In addition, a mirror exposure exercise, group discussions, and role plays encourage women to identify non-physical characteristics they like about themselves, rather than focusing on physical features.

Dissonance based eating disorder prevention programs have been thoroughly studied, with most studies providing medium to large effect sizes in program outcomes. Numerous studies examining the efficacy of these programs have provided evidence of significant reductions in thin-ideal internalization, body dissatisfaction, negative affect, restrained eating, and eating disorder symptoms in high risk adolescent girls (Stice et al., 2001; Stice, Marti et al., 2008; Stice et al., 2000; Stice et al., 2006; Stice, Trost, & Chase, 2003), college women, and sororities (Becker et al., 2006; Becker, Bull et al., 2008; Perez et al., 2010). When compared to control groups, individuals who

participated in a dissonance prevention program have shown greater reductions in eating disorder symptoms and risk factors, such as body dissatisfaction, bulimic pathology and dietary restraint, future risk for onset of clinical and subclinical eating disorders and obesity (Becker, Ciao et al., 2008; Mitchell, Mazzeo, Rausch, & Cooke, 2007; Roehrig, Thompson, Brannick, & van den Berg, 2006; Stice et al., 2003; Stice, Marti et al., 2008; Stice, Shaw et al., 2008; Wade, George, & Atkinson, 2009). More importantly, some studies have shown that these reductions have been sustained through a 3-year follow-up assessment (Stice, Marti et al., 2008; Stice et al., 2000; Stice et al., 2006; Stice, Shaw et al., 2008). These results have been replicated in Hispanic and Asian American samples, with no significant differences in outcomes when compared to sample of White participants who had undergone the same intervention (Rodriguez, Marchand, Ng, & Stice, 2008) lending support to the generalizability of this type of program. Dissonance prevention programs have also been found to reduce eating disorder symptoms and risk factors in dissemination research in college students (Becker, Bull et al., 2008; Becker et al., 2006; Perez et al., 2010), and high school students (Stice, Rohde, Gau, & Shaw, 2009; Stice, Rohde, Shaw, & Gau, 2011).

Current Study and Hypotheses

To expand upon existing literature, the current study examined structural models of the relationship between thin-ideal internalization and self-objectification cross-sectionally using baseline assessment data only. Consistent with previous research, it was hypothesized that thin-ideal internalization would predict self-objectification (Figure 1a) (H1). However, exploration of a second model (Figure 1b) was also

conducted to determine if self-objectification significantly predicted thin-ideal internalization. It is plausible that this relationship exists as the habitual monitoring of one's body and appearance that is characteristic of self-objectification may lead individuals to internalize the thin-ideal and be more likely to attempt to attain this body type. This may occur because as individuals engage in self-objectification, they will spend more time evaluating their own physical appearance and specific body parts and comparing themselves to others, which could then lead them to engage in thin-ideal internalization. Also consistent with previous research, it was hypothesized that both self-objectification and thin-ideal internalization would predict both body dissatisfaction (Daubenmier, 2005; Strelan & Hargreaves, 2005) and eating disorder symptoms (Calogero, 2009; Tylka & Hill, 2004), and body dissatisfaction would predict eating disorder symptoms (Hrabosky & Grilo, 2007; Stice, 2002).

The relationship between self-objectification and thin ideal internalization was also examined longitudinally within a cognitive dissonance based eating disorder prevention program. It was predicted that a reduction in self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms would occur immediately following the intervention and be sustained over time (H2). Longitudinal examinations of the hypothesized and exploratory structural models (Figure 1a and 1b) were also conducted to determine if post-intervention thin-ideal internalization and self-objectification predicted 5-month and 1-year follow-up body dissatisfaction and eating disorder symptoms. It was predicted that the hypothesized structural model (Figure 1a) would be supported by the data for post-intervention assessments of thin-ideal

internalization and self-objectification predicting both 5-month (H3) and 1-year follow-up (H4) body dissatisfaction and eating disorder symptoms.

Longitudinal analyses were also conducted to assess if change in thin-ideal internalization and self-objectification from baseline to post-intervention assessment separately predicted body dissatisfaction and eating disorder symptoms at both 5-month and 1-year follow-up assessments. Previous studies have supported this relationship between thin-ideal internalization and body dissatisfaction and eating disorder symptoms within a dissonance based eating disorder prevention program (Seidel, Presnell, & Rosenfield, 2009; Stice et al., 2007); however, these studies did not examine self-objectification. Therefore, consistent with previous research, it was hypothesized that change in thin-ideal internalization would predict body dissatisfaction and eating disorder symptoms at both 5-month (H5) and 1-year follow-up (H6) assessments. It was also hypothesized that change in self-objectification would predict body dissatisfaction and eating disorder symptoms at both 5-month (H7) and 1-year follow-up (H8) assessments.

Temporal sequence of change across time between thin-ideal internalization and self-objectification was also explored. Consistent with the limited existing research, it was hypothesized that meaningful change in thin-ideal internalization would precede meaningful change in self-objectification (H9). Finally, comparisons of eating disorder symptoms at 1-year follow-up among individuals who showed meaningful change in thin-ideal internalization before self-objectification, participants who showed meaningful change in self-objectification before thin-ideal internalization, and

participants who showed simultaneous change in both variables were conducted. It was hypothesized that participants who showed meaningful change in thin-ideal internalization before self-objectification would have lower levels of eating disorder symptoms at 1-year follow-up assessments than participants in the two other groups (H10).

METHOD

Participants

Participants consisted of freshman undergraduate college women enrolled in a sorority at a large public university who participated in a cognitive dissonance eating disorder prevention program and completed baseline, post-intervention, 5-month, and 1-year follow-up assessments. Total initial participants included 177 women who completed all baseline measures. Due to attrition from premature termination of some participants, 169 (95.5%) completed post-intervention assessments, 159 (89.8%) completed 5-month follow-up assessments, and 105 (59.3%) completed 1-year follow-up assessments. Participants ranged in age from 18 to 22 (M = 19.25, SD = 1.09), with most participants identifying as Caucasian (95.5%), followed by Hispanic (2.3%), Native American (0.4%), and of mixed ethnicities (1.3%). According to the Center for Disease Control and Prevention (CDC, 2011), body mass indexes (BMIs) below 18.5 indicate underweight, from 18.5 to 24.9 indicate normal weight, 25.0 to 29.9 indicate overweight, and 30.0 and above indicate obesity. BMIs for participants in the current study ranged from 16.18 to 29.21 (M = 21.28, SD = 1.99), with 11 (6%) individuals in the underweight category, 161 (91%) individuals in the normal weight category, and 5 (3%) individuals in the overweight category. This data set has previously been used by Perez, Becker, and Ramirez (2010) to examine the transportability of this prevention program within social organizations; however, the hypotheses and analyses in the

current study are unique, as the previous study did not include self-objectification as a variable in their examinations.

Measures

Thin-ideal internalization. The Ideal-Body Stereotype Scale-Revised (IBSS-R; Stice, Ziemba et al., 1996) is a 10-item measure used to assess thin-ideal internalization. Participants rate items (e.g., "thin women are more attractive") on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items are averaged with higher scores indicating higher levels of thin-ideal internalization. Scores on the IBSS-R have demonstrated internal consistency reliability, Cronbach's $\alpha = .91$, test-retest reliability, $r = .80$, and predictive validity (Stice, Ziemba et al., 2006). Alphas for the current study were .89, .94, .92, and .93 for baseline, post-intervention, 5-month follow-up, and 1-year follow-up respectively.

Self-objectification. The Self Objectification Questionnaire (SOQ; Noll & Frederickson, 1998) is a 10-item measure used to assess self-objectification. Participants are asked to rank-order ten body attributes, five of which are appearance-based (weight, sex appeal, physical attractiveness, firm/sculpted muscles, measurements), and five are competence-based (strength, physical coordination, energy level, health, physical fitness), from most important (*9*) to least important (*0*) according to how much impact each had on their physical self-concept. Overall scores are computed by subtracting the sum of the competence rankings from the sum of the appearance rankings. Possible scores range from -25 to 25, with higher scores indicating greater self-objectification. The scoring method for the SOQ and the nature of the rank-ordered data prevents

traditional reporting of internal consistency values. Therefore, internal consistency reliability is determined by calculating a correlation between the sum of the appearance-based items and the sum of the competence-based items (Hill & Fischer, 2008). If participants rank the appearance-based attributes as more important than the competence-based attributes, a negative correlation would be expected between the two sets of attributes. Previous research using this method as a measure of internal consistency reliability for the SOQ has demonstrated strong negative correlations between appearance and competence rankings, indicating good reliability, r = -.81 to -.88 (Hill & Fischer, 2008; Calogero & Jost, 2011). For the current study, the correlations between appearance and competence rankings were -.99, -1.00, -1.00, and -1.00 for baseline, post-intervention, 5-month follow-up, and 1-year follow-up respectively.

Body dissatisfaction. The Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) was used to assess body dissatisfaction. The BSQ contains 34 items (e.g., "have you felt ashamed of your body") that are rated on a 6-point scale ranging from 1 (*never*) to 6 (*always*). Scores are obtained by summing all items, with higher scores indicating greater body dissatisfaction. The BSQ has demonstrated internal consistency, Cronbach's α = .96 (Cooper et al., 1987), test-retest reliability, r = .88 (Rosen, Jones, Ramirez, & Waxman, 1996), and convergent and predictive validity (Cooper et al., 1987; Evans & Dolan, 1993). For the current study, alphas were .97, .98, .98, and .96 for baseline, post-intervention, 5-month follow-up, and 1-year follow-up respectively.

Eating disorder symptoms. The Eating Disorders Examination – Questionnaire (EDE-Q; Fairburn & Beglin, 1994) was used to assess eating disorder symptoms. The EDE-Q contains items that specifically measure participant's eating attitudes and behaviors over one-month (e.g., "over the past 28 days how many times have you taken laxatives as a means of controlling your shape or weight?"), and can be used to make tentative diagnoses of anorexia nervosa and bulimia nervosa. The EDE-Q is a self-report version of the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993), a semi-structured interview used for the assessment of eating disorders. Global scores, calculated by averaging the average scores from each of the four subscales, were used for the current study. Research on the EDE-Q has demonstrated internal consistency for Global scores, α =.78 to .93, and test-retest reliability, r = .81 to .94 (Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beaumont, 2004). Alphas for the current study were .93, .95, .93, and .95 for baseline, post-intervention, 5-month follow-up, and 1-year follow-up respectively.

Body mass index. This measurement was used as a covariate in the current study because it was significantly correlated with body dissatisfaction and eating disorder symptoms in the current study, which is consistent with previous research (i.e. Greenleaf, 2005; Stice 2002). Participants reported their height and weight, which were converted to metric units to calculate their BMI (kg/m^2). Previous research on self-report of BMI has indicated that women tend to accurately report their height, but underestimate their weight indicating that self-reported measurements should be interpreted with caution when assessing BMI (Jacobson, & DeBock, 2001).

Procedure

In the first year the program was conducted within the sorority, all sorority members were required to participate in the *Reflections:* Body Image Program unless they were excused by a sorority officer from the local chapter. In the second year of the program, all new sorority members were required to participate in Reflections unless they were excused by a sorority officer from the chapter. Only 5 women across the 2 years were excused from participating in the program. Reasons for not participating included schedule conflicts, death of family members, and preplanned vacations. Although the sorority made *Reflections* mandatory, participation in this study was voluntary. Data collection and *Reflections* were maintained separately. To further ensure the separation of the program and data collection, the voluntary nature was stressed at each assessment, questionnaires were handed out to the women by research assistants not associated with the *Reflections* program, and questionnaires were turned in via a lock box in the sorority mailroom. This study was approved by the Institutional Review Board and run in collaboration with the executive office of the sorority participating in the current study as well as the local chapter of this organization.

Reflections: Body Image Program. *Reflections* small groups were run by a peer facilitator and 1 to 2 peer leaders. During the first year of the study, the peer facilitator was a sorority member with a Bachelors degree who had just graduated from college and was employed by the national executive office as a field consultant. Field consultants' primary job was to travel the country on behalf of the executive office to meet with individual chapters. The field consultant/peer facilitator underwent a total of

8 hr of experiential training at the national executive office. Training for the peer facilitator was provided by a doctoral level psychologist experienced in training leaders for this program. The field consultant was then tasked with the job of training peer leaders and running groups with the peer leaders she had trained. Peer leaders consisted of undergraduate sorority members who underwent 4 hr of experiential training and were trained by the peer facilitator. Both the peer facilitator and peer leaders received a detailed manual that included the amount of time each section should take, important topics to cover, etc. While receiving the peer leader training, the undergraduate sorority members were also trained in the peer facilitator role. In Year 1, only the field consultant/peer facilitator led the groups, but the peer leaders had the opportunity to ask the field consultant/peer facilitator questions related to running the groups.

In the second year of the program, the previously trained peer leaders now practiced being peer facilitators and trained a new cohort of peer leaders. A doctoral level psychologist was present during all of the training sessions to assist with troubleshooting in running group work in both years. Thus the peer facilitators received 4 hr of experiential training and then ran 4 more hours of training with doctoral level feedback and assistance. New peer leaders were then selected for the second year and underwent the same training as in the first year but were trained by Year 2 peer facilitators.

For the actual intervention which began immediately following baseline assessment, sorority members attend two 2-hr sessions in group formats. Groups ranged from 15 to 20 members. During the first session sorority members defined the ideal

body image for women, discussed the costs and origins of the thin ideal, discussed different sources that pressure women to conform to the thin ideal and the impact this has on women, discussed a personal situation where they felt pressured to conform to the thin ideal and ways to appropriately respond, and were given a mirror exercise to do at home. During the second session, sorority members discussed the homework exercise, conducted three role plays where they attempt to dissuade a friend from pursuing the thin ideal, discussed statements that women commonly make to each other that perpetuate the thin ideal, came up with ways they could resist the pressure to conform to the thin ideal, and discussed barriers that may arise when resisting the thin ideal. Post-intervention assessments were completed immediately following the conclusion of the second session. In response to feedback from the sorority members requesting more activities after the conclusion of the program, 3 booster activities were added per semester. Booster activities were new activities that members had not undergone throughout the prevention program, and were created by peer leaders during each year of the program. All participants received the booster activities. These activities took approximately 10 min and were done during chapter meetings. For example, sorority members left anonymous notes to each other complimenting a nonphysical feature. The booster session activities served as a reminder to the sorority members to reject the thin ideal.

The *Reflections* program is the same prevention program that Becker et al. described in their studies (2005, 2006). However, whereas the Becker et al. studies were supported by a local sorority system at a small university, the program in the present

study was supported by the Tri-Delta national organization. This program was altered by Becker from Stice's original prevention program by combining the four 1-hr sessions into two 2-hr sessions and adding a focus on the collective power of sorority members to institute cultural change within their organizations.

Data Analyses

Cross-sectional inspection of the data (H1) was conducted via path analysis, a form of structural equation modeling. The hypothesized model (Figure 1a) and the exploratory model (Figure 1b), were both explored using this approach. The total initial sample (N = 177) from baseline assessment only was used for this analysis, which exceeds the number of participants needed for a case-to-parameter ratio of 10:1 to examine the structural model (Kline, 2010).

Longitudinal investigation of the changes across time in thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorders symptoms that occur when a dissonance eating disorder prevention program is implemented (H2) were conducted using hierarchical linear modeling (HLM). The HLM analysis consisted of two levels. Changes in the dependent variable over time for each individual were modeled at level one. Baseline assessments for each dependent variable were treated as time 0, setting baseline assessment as the intercept for each model. Level two also modeled changes in the dependent variable over time for each individual in order to account for the tendency of an individual's scores to be correlated across time.

Longitudinal examinations of thin-ideal internalization and self-objectification were also conducted via path analysis to determine if post-intervention thin-ideal

internalization and self-objectification predicted body dissatisfaction and eating disorder symptoms at 5-month (H3) and 1-year follow-up(H4). The hypothesized structural model (Figure 1a) and the exploratory model (1b) were examined for both 5-month and 1-year assessments of body dissatisfaction and eating disorder symptoms. All participants who completed post-intervention IBSS-R and SOQ, and 5-month follow-up BSQ and EDE-Q assessments ($N = 117$) were included in the 5-month follow-up analyses, and all participants who completed post-intervention IBSS-R and SOQ, and 1-year follow-up BSQ and EDE-Q assessments ($N = 67$) were included in the 1-year follow-up analyses.

Longitudinal analyses were conducted using hierarchical regression to assess if change in thin-ideal internalization and self-objectification from baseline to post-intervention assessment separately predicted body dissatisfaction and eating disorder symptoms at both 5-month and 1-year follow-up assessments (H5-H8). Each variable was assessed individually for each time point. Specifically, 5-month follow-up body dissatisfaction was entered as the dependent variable in the first model, with baseline body dissatisfaction entered as a covariate. Baseline self-objectification was then entered as the independent variable for the second step in the model, followed by post-intervention self-objectification as the independent variable in the third step to account for the change in self-objectification from baseline to post-intervention assessment rather than using change scores. This was repeated for 5-month follow-up eating disorder symptoms and 1-year follow-up body dissatisfaction and eating disorder symptoms separately. Finally, this entire procedure was repeated replacing baseline and post-

intervention self-objectification with baseline and post-intervention thin-ideal internalization. All participants who completed baseline and post-intervention IBSS-R, SOQ, BSQ, and EDE-Q and 5-month follow-up BSQ and EDE-Q assessments ($N = 117$) were included in the 5-month follow-up analyses, and all participants who completed baseline and post-intervention IBSS-R, SOQ, BSQ, and EDE-Q and 1-year follow-up BSQ and EDE-Q assessments ($N = 67$) were included in the 1-year follow-up analyses.

The exploration of temporal sequence of change between self-objectification and thin-ideal internalization (H9) was examined using two different approaches. In the first method, previously utilized by Stice et al. (2007), change scores were calculated by subtracting baseline from post-intervention assessment total scale scores for both thin-ideal internalization and self-objectification. Only baseline and post-intervention assessments were used for this analysis, as this time period is typically when the most marked intervention effects are seen. These change scores were then used to assess meaningful change for each variable, which was defined as a 0.5 *SD* reduction in the variables as this value represents a medium effect size (Cohen, 1988). Using baseline assessment, 0.5 *SD* for each variable was calculated and then divided by the change score for that variable for each participant, reflecting the time it took for each participant to display a 0.5 *SD* reduction in each variable. Participants who showed a 0.5 *SD* reduction in thin-ideal internalization before showing a 0.5 *SD* reduction in self-objectification were assigned a score of 1, and participants who showed a 0.5 *SD* reduction in self-objectification before showing a 0.5 *SD* reduction in thin-ideal internalization were assigned a score of 0. Any participants that did not show a 0.5 *SD*

reduction in either of the two variables were eliminated from the analyses ($N = 2$), resulting in a total sample of 119 participants. A binomial test was then conducted to determine if meaningful change for each variable was greater than .50 for participants who displayed a meaningful reduction on the corresponding variable.

Since the previous method only evaluates the data at baseline and post-intervention, further examination of the temporal sequence of change between self-objectification and thin-ideal internalization was conducted via standard regression analyses using change scores from baseline, post-intervention, and 5-month follow-up assessments. Two change scores for both variables were calculated by subtracting baseline from post-intervention assessment total scale scores and by subtracting post-intervention from 5-month follow-up total scale scores to allow for exploration of temporal sequence of change across a longer time period. A regression was then conducted to examine if change in thin-ideal internalization from baseline to post-intervention predicted change in self-objectification from post-intervention to 5-month follow-up while controlling for change in self-objectification from baseline to post-intervention. A second regression was conducted in order to determine if change in self-objectification from baseline to post-intervention predicted change in thin-ideal internalization from post-intervention to 5-month follow-up while controlling for change in thin-ideal internalization from baseline to post-intervention. Data from all participants who completed baseline, post-intervention, and 5-month follow-up assessments of the SOQ and the IBSS-R were used to complete these analyses ($N = 116$).

Temporal sequence of change between thin-ideal internalization and self-objectification was also examined using path analysis. The first model examined if thin-ideal internalization baseline total scale scores predicted self-objectification post-intervention total scale scores while controlling for baseline self-objectification total scale scores. The second model examined if self-objectification baseline total scale scores predicted thin-ideal internalization post-intervention total scale scores while controlling for baseline thin-ideal internalization total scale scores. Data from all participants who completed baseline and post-intervention assessments of the SOQ and the IBSS-R were used to complete these analyses ($N = 121$).

Finally, comparisons of eating disorder symptoms at 1-year follow-up among individuals who showed meaningful change in thin-ideal internalization before self-objectification, individuals who showed meaningful change in self-objectification before thin-ideal internalization, and individuals who showed simultaneous change in both variables (H10) were conducted using the meaningful change scores calculated in the first method analyzing the temporal sequence of change between thin-ideal internalization and self-objectification. Therefore, meaningful change for each variable was represented by a 0.5 *SD* reduction in a particular variable. Once participants were assigned to their respective groups, a univariate analysis of variance (ANOVA) was conducted to determine if significant group difference in eating disorder symptoms at 1-year follow-up were observed.

RESULTS

Data Preparation

Missing data points were handled by substituting participants' mean scale scores for the missing value, as only 11 data points were missing throughout the data set. After the missing data points were addressed, data were screened for normality of distribution. No variables were transformed as the skewness and kurtosis values for BMI, thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms were acceptable (skewness range = -1.14 to 0.84, kurtosis range = -1.12 to 2.50). Scale means and standard deviations for each of the four variables of interest and BMI at each of the four time points and correlations for all dependent variables at baseline assessment are presented in Table 1. Multivariate analyses of variance (MANOVA) were conducted to assess group differences in ethnicity and age on BMI, thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms. Due to small sample sizes for some ethnic groups, non-White participants were combined for this analysis. No significant differences were found between White (n = 168) and non-White participants (n = 9), F (5, 171) = 1.11, p = .36, Wilks's Λ = 0.97, or among ages, F (16, 514) = 1.37, p =.15, Wilks's Λ = 0.88.

Cross-Sectional Examination of Thin-Ideal Internalization and Self-Objectification

The hypothesized structural model (Figure 1a) was analyzed using Mplus Version 6 (Muthén & Muthén, 2010) with maximum likelihood (ML) estimation. Total scale scores from baseline assessment only served as the observed variables in this

analysis. Given BMI's significant correlation with eating disorder symptoms and body dissatisfaction, it was specified as a covariate predicting each of these two variables. As recommended by Hu and Bentler (1999), adequacy of model fit was determined by the Comparative Fit Index (CFI), the standardized root-mean square residual (SRMR), and the root mean square error of approximation (RMSEA).

It was hypothesized that thin-ideal internalization would predict self-objectification; both thin-ideal internalization and self-objectification would in turn predict body dissatisfaction and disordered eating; and body dissatisfaction would predict disordered eating (H1). The CFI (1.00), SRMR (.01), and RMSEA (.00) values all indicated that the hypothesized fully saturated model provided a relatively good fit to the data (Figure 1a). The model accounted for 67% of the variance in eating disorder symptoms, 42% of the variance in body dissatisfaction, and 10% of the variance in self-objectification. The standardized path coefficients for the structural model were significant and in the expected direction with the exception of the hypothesized direct links of thin-ideal internalization to eating disorder symptoms and self-objectification to eating disorder symptoms. Specifically, thin-ideal internalization was related directly to self-objectification and body dissatisfaction; self-objectification was related directly to body dissatisfaction; body dissatisfaction was related directly to eating disorder symptoms; and BMI was related directly to body dissatisfaction and eating disorder symptoms.

Next a structural model examining if self-objectification significantly predicted thin-ideal internalization (Figure 1b) was assessed. Similar to the hypothesized

structural model, BMI was specified as covariate for body dissatisfaction and eating disorder symptoms. The CFI (.99), SRMR (.02), and RMSEA (.06) values all indicated that this structural model also provided a relatively good fit to the data; however, the fit of this model was slightly less adequate than the fit of the previous structural model (Figure 1a). However, tests of statistical significance between the hypothesized model and the exploratory model assessed using the chi square difference test indicated that the differences between these models were not significant, $\Delta\chi^2 = 1.24$, $\Delta df = 0$, $p = .51$. Identical to the previous structural model, this model accounted for 67% of the variance in eating disorder symptoms, 42% of the variance in body dissatisfaction, and 10% of the variance in thin-ideal internalization. The standardized path coefficients were identical to the path coefficients from the hypothesized structural model, including the path from self-objectification to thin-ideal internalization which was also significant. The direct links from thin-ideal internalization and self-objectification to eating disorder symptoms were also non-significant within this model.

Due to the significant relationship between thin-ideal internalization and self-objectification found in the first two models, the fit of these structural models was compared to the fit of an alternative model that included a direct feedback loop between thin-ideal internalization and self-objectification. The non-significant direct paths from thin-ideal internalization to eating disorder symptoms and self-objectification to eating disorder symptoms were also eliminated from this model, as these paths were non-significant in both of the previous models. The CFI (1.00), SRMR (.00), and RMSEA (.00) values were superior to those from the previous models. Chi square difference

tests indicated that the differences between this alternate model and the hypothesized model (Figure 1a), $\Delta\chi^2 = 18.26$, $\Delta df = 2$, $p < .05$, and this model and the exploratory model (Figure 1b), $\Delta\chi^2 = 19.50$, $\Delta df = 2$, $p < .05$ were both significant, further supporting the superiority of this model. This model accounted for 67% of the variance in eating disorder symptoms, and 43% of the variance in body dissatisfaction. Standardized path coefficients and 95% confidence intervals for this model are presented in Figure 2. The standardized path coefficients for this model were identical to the path coefficients from the first two models, with a significant path coefficient for the feedback loop between thin-ideal internalization and self-objectification. Therefore, this alternative model provided a better fit to the data and was more parsimonious than both of the previous models.

Because the links of thin-ideal internalization to eating disorder symptoms and self-objectification to eating disorder symptoms were not significant, which is inconsistent with previous research, standard regression analyses were conducted on a post hoc basis. These analyses showed that both thin-ideal internalization, $\beta = 0.40$, $t(176) = 5.79$, $p < .001$, and self-objectification, $\beta = 0.42$, $t(176) = 6.11$, $p < .001$, separately predicted eating disorder symptoms as hypothesized. However, when a multiple regression analysis was conducted including all variables of interest and BMI, these relationships between thin-ideal internalization and eating disorder symptoms, $\beta = 0.04$, $t(176) = 0.89$, $p = .38$, and self-objectification and eating disorder symptoms, $\beta = 0.03$, $t(176) = 0.60$, $p = .55$, became non-significant.

Longitudinal Examination of Self-Objectification and Thin-Ideal Internalization within a Prevention Program

Hierarchical linear modeling was conducted using SPSS version 19.0 (IBM Corporation, 2010) with restricted maximum likelihood estimation (RML). Total scale scores served as the observed variables in this analysis. BMI was included as a covariate in these analyses due to its significant relationship with body dissatisfaction and eating disorder symptoms. BMI was centered at the grand mean in order to make the relationship between BMI and the dependent variables more easily interpretable. Results from these analyses, including 95% confidence intervals and effect sizes are presented in Table 2. Effect sizes for each model were reported using the proportional reduction in variance (pseudo R^2).

It was predicted that a reduction in self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms would occur immediately following the intervention and be sustained over time (H2). Consistent with the hypothesis, thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms all significantly decreased at post-intervention assessment (*p*s < .001). Significant decreases in thin-ideal internalization, body dissatisfaction, and eating disorder symptoms were also observed at both 5-month and 1-year follow up assessments; however, the decrease in thin-ideal internalization was more significant at the 1-year follow-up assessment ($p < .01$) than at the 5-month follow-up assessment ($p < .05$). A significant decrease in self-objectification was observed at the 5-month follow-up assessment but, contrary to the hypothesis, was not observed at the 1-year follow-up

assessment. Additionally, a significant main effect of BMI was observed for both eating disorder symptoms and body dissatisfaction (*p*s < .001), indicating that higher BMI is associated with higher levels of these variables. No significant main effect of BMI was observed for self-objectification or thin-ideal internalization, which is consistent with the correlations between these variables.

Longitudinal examination of thin-ideal internalization and self-objectification was also conducted via path analysis using post-intervention, 5-month follow-up, and 1-year follow-up assessments. Identical to the cross-sectional path analysis, total scale scores served as the observed variables in this analysis, and BMI was specified as a covariate predicting body dissatisfaction and eating disorder symptoms. First, the hypothesized structural model (Figure 1a) was examined using post-intervention assessments for thin-ideal internalization and self-objectification to determine if these variables significantly predicted body dissatisfaction and eating disorder symptoms at 5-month follow-up assessments. Then the exploratory model (Figure 1b) examining if the relationship between self-objectification and thin-ideal internalization could be revered was examined using the same time points. This procedure was then replicated using post-intervention assessments for thin-ideal internalization and self-objectification to determine if these variables predicted body dissatisfaction and eating disorder symptoms at 1-year follow-up assessments. It was predicted that the hypothesized structural model (Figure 1a) would be supported by the data for post-intervention assessments of thin-ideal internalization and self-objectification predicting both 5-month (H3) and 1-year follow-up (H4) body dissatisfaction and eating disorder symptoms.

For the hypothesized structural model (Figure 1a) using post-intervention scores for thin-ideal internalization and self-objectification and 5-month follow-up scores for body dissatisfaction and eating disorder symptoms (H3), the CFI (0.99), SRMR (.09), and RMSEA (.04) values all indicated that this model provided an acceptable fit to the data. The model accounted for 76% of the variance in eating disorder symptoms, 18% of the variance in body dissatisfaction, and 13% of the variance in self-objectification. The standardized path coefficients for the structural model were significant and in the expected direction with the exception of the hypothesized direct link of post-intervention thin-ideal internalization to 5-month follow-up eating disorder symptoms. Specifically, post-intervention thin-ideal internalization was related directly to post-intervention self-objectification and 5-month follow-up body dissatisfaction; post-intervention self-objectification was related directly to 5-month follow-up body dissatisfaction; 5-month follow-up body dissatisfaction was related directly to 5-month follow-up eating disorder symptoms. BMI was no longer related directly to body dissatisfaction and eating disorder symptoms in this model.

For the exploratory structural model (Figure 1b) using post-intervention scores for thin-ideal internalization and self-objectification and 5-month follow-up scores for body dissatisfaction and eating disorder symptoms, the CFI (1.00), SRMR (.02), and RMSEA (.00) values all indicated that this model provided a better fit to the data than the previous model. However, tests of statistical significance between the hypothesized model and the exploratory model assessed using the chi square difference test indicated that the differences between these models were not significant, $\Delta\chi^2 = 3.04$, $\Delta df = 0$, $p =$

.27. The model accounted for 76% of the variance in eating disorder symptoms, 19% of the variance in body dissatisfaction, and 13% of the variance in thin-ideal internalization. The standardized path coefficients were identical to the path coefficients from the hypothesized structural model, including the path from post-intervention self-objectification to post-intervention thin-ideal internalization which was also significant. The direct link from post-intervention thin-ideal internalization to 5-month follow-up eating disorder symptoms was also non-significant within this model. BMI was also no longer related directly to body dissatisfaction and eating disorder symptoms in this model.

Due to the significant relationship between thin-ideal internalization and self-objectification found in the previous two models, the fit of these structural models was compared to the fit of an alternative model that included a direct feedback loop between thin-ideal internalization and self-objectification. The non-significant direct paths from post-intervention thin-ideal internalization to 5-month follow-up eating disorder symptoms and BMI to body dissatisfaction and eating disorder symptoms were also eliminated from this model, as these paths were non-significant in both of the previous models. The CFI (1.00), SRMR (.00), and RMSEA (.00) values were superior to those from the previous models. Chi square difference tests indicated that the differences between this alternate model and the hypothesized model, $\Delta\chi^2 = 20.75$, $\Delta df = 2$, $p < .05$, and this model and the exploratory model, $\Delta\chi^2 = 23.80$, $\Delta df = 2$, $p < .05$ were both significant, further supporting the superiority of this model. This model accounted for 76% of the variance in eating disorder symptoms, and 19% of the variance in body

dissatisfaction. Standardized path coefficients and 95% confidence intervals for this model are presented in Figure 3. The standardized path coefficients for this model were identical to the path coefficients from the first two models, with a significant path coefficient for the feedback loop between thin-ideal internalization and self-objectification. Therefore, this alternative model provided a better fit to the data and was more parsimonious than both of the previous models.

This procedure was then replicated using post-intervention thin-ideal internalization and self-objectification and 1-year follow-up body dissatisfaction and eating disorder symptoms (H4). However, because of the direct feedback look between post-intervention thin-ideal internalization and self-objectification found in the previous models, the analysis of the structural models including 1-year follow-up body dissatisfaction and eating disorder symptoms was only assessed using the direct feedback loop rather than examining both the hypothesized model (Figure 1a) and exploratory model (Figure 1b). All other pathways indicated in both the hypothesized and exploratory models were assessed within this model. The CFI (1.00), SRMR (.00), and RMSEA (.00) values all indicated that this model provided a good fit to the data. This model accounted for 70% of the variance in eating disorder symptoms, and 18% of the variance in body dissatisfaction. Standardized path coefficients and 95% confidence intervals for this model are presented in Figure 4. The standardized path coefficients for the structural model were significant and in the expected direction for post-intervention thin-ideal internalization to post-intervention self-objectification and 1-year follow-up body dissatisfaction, 1-year follow-up body dissatisfaction to 1-year follow-up eating

disorder symptoms, and BMI to body dissatisfaction. The hypothesized direct links of post-intervention thin-ideal internalization to 1-year follow-up eating disorder symptoms, post-intervention self-objectification to 1-year follow-up eating disorder symptoms, post-intervention self-objectification to 1-year follow-up body dissatisfaction, and BMI to eating disorder symptoms were not significant.

Longitudinal analyses were also conducted via hierarchical regression to determine if change in thin-ideal internalization and self-objectification separately predicted body dissatisfaction and eating disorder symptoms at both 5-month and 1-year follow-up assessments. Each variable was assessed separately for each time point (i.e. self-objectification predicting body dissatisfaction at 5-month follow-up controlling for baseline body dissatisfaction). Hierarchical regressions were set up with either body dissatisfaction or eating disorder symptoms at a particular time point as the dependent variable, controlling for that variable at baseline assessment. Rather than using change scores, thin-ideal internalization or self-objectification at baseline were then entered as the independent variable in step two of the regression, followed by post-intervention thin-ideal internalization or self-objectification as the independent variable in the third step. For example, Step 1 – Baseline Body Dissatisfaction, Baseline Self-Objectification, Step 2 – Post-Intervention Self-Objectification, Dependent Variable – 5 month follow up Body Dissatisfaction. It was hypothesized that change in thin-ideal internalization would predict body dissatisfaction and eating disorder symptoms at both 5-month (H5) and 1-year follow-up (H6) assessments. It was also hypothesized that change in self-objectification would predict body dissatisfaction and eating disorder

symptoms at both 5-month (H7) and 1-year follow-up (H8) assessments. Results indicated that, contrary to the hypotheses change in self-objectification from baseline to post-intervention assessment did not significantly predict 5-month follow-up body dissatisfaction, $\beta = 0.17$, $t(116) = 1.08$, $p = .28$, eating disorder symptoms, $\beta = 0.01$, $t(116) = 1.67$, $p = .10$, 1-year follow-up body dissatisfaction, $\beta = -0.20$, $t(66) = -0.76$, $p = .45$, or eating disorder symptoms, $\beta = 0.004$, $t(66) = 0.55$, $p = .59$. Similarly, change in thin-ideal internalization from baseline to post-intervention assessment also did not significantly predict 5-month follow-up body dissatisfaction, $\beta = 1.13$, $t(116) = 0.41$, $p = .68$, eating disorder symptoms, $\beta = -0.03$, $t(116) = -0.29$, $p = .77$, 1-year follow-up body dissatisfaction, $\beta = -0.22$, $t(66) = -0.01$, $p = .95$, or eating disorder symptoms, $\beta = -0.03$, $t(66) = -0.30$, $p = .77$.

Exploration of the Temporal Sequence of Change between Thin-Ideal Internalization and Self-Objectification

Analysis for the exploration of the temporal sequence of change across time in self-objectification and thin-ideal internalization was conducted using change scores from baseline to post-intervention assessment for both variables. Change scores were then used to establish meaningful change for each variable which was calculated by dividing the change score for each variable by the 0.5 *SD* from baseline assessment for each participant. Participants who did not show meaningful change in either variable were excluded from the analyses. Finally, a binomial test was conducted to determine if the meaningful change for each variable was greater than 0.50 for participants with a meaningful change on the corresponding variable. It was hypothesized that meaningful

change in thin-ideal internalization would precede meaningful change in self-objectification (H9). Results indicated that among the 119 participants with 0.5 *SD* reduction in either variable, more participants ($N = 67$, 56.3%) showed a 0.5 *SD* decrease in thin-ideal internalization before they showed a 0.5 *SD* decrease in self-objectification ($N = 52$, 43.7%); however, this difference was not significant ($p = .20$) indicating that a significant temporal sequence of change cannot be established between thin-ideal internalization and self-objectification within this sample.

Standard regression analyses were also conducted to further explore if temporal sequence of change between self-objectification and thin-ideal internalization could be established. These analyses were run using change scores for both thin-ideal internalization and self-objectification calculated as baseline assessment subtracted from post-intervention assessment and post-intervention assessment subtracted from 5-month follow-up assessment. Of the 116 participants used for these analyses who completed self-objectification and thin-ideal internalization measures at all three time points, results showed that change in thin-ideal internalization from baseline to post-intervention assessment did not significantly predict change in self-objectification from post-intervention to 5-month follow-up assessment when controlling for change in self-objectification from baseline to post-intervention assessment, $\beta = -1.96$, $t(114) = -1.29$, $p = .20$. Also, change in self-objectification from baseline to post-intervention assessment did not significantly predict change in thin-ideal internalization from post-intervention to 5-month follow-up assessment when controlling for change in thin-ideal internalization from baseline to post-intervention assessment, $\beta = -.001$, $t(114) = -.26$, $p = .79$. Results

from both of these regressions support the previous analyses which indicated that temporal precedence between thin-ideal internalization and self-objectification cannot be established in the current sample.

Temporal sequence of change between thin ideal internalization and self-objectification was also assessed via path analysis using data from the 121 participants who completed the SOQ and IBSS-R measures at baseline and post-intervention assessments. Two separate models were examined for these analyses: baseline thin-ideal internalization predicting post-intervention self-objectification controlling for baseline self-objectification, and baseline self-objectification predicting post-intervention thin-ideal internalization controlling for baseline thin-ideal internalization. While both of these models provided a good fit to the data with identical CFI (1.00), SRMR (.00), RMSEA (.00) values, the paths between thin-ideal internalization and self-objectification in both models were non-significant. The results from these three evaluations collectively indicate that contrary to the hypothesis that meaningful change in thin-ideal internalization would precede meaningful change in self-objectification (H9), these results suggest that meaningful change in self-objectification or thin-ideal internalization does not precede meaningful change in the other variable but rather occurs simultaneously.

Finally, eating disorder symptoms at 1-year follow-up assessment were compared between two groups: individuals who showed meaningful change in thin-ideal internalization before self-objectification and individuals who showed meaningful change in self-objectification before thin-ideal internalization. Only these two groups

were compared since only 2 participants showed simultaneous meaningful change in thin-ideal internalization and self-objectification, and these participants did not complete the 1-year follow-up assessment eliminating this group from the analysis. These comparisons were conducted using the meaningful change scores created in the first method examining temporal sequence of change between thin-ideal internalization and self-objectification, where meaningful change is represented by a 0.5 *SD* reduction in a particular variable. It was hypothesized that participants who showed meaningful change in thin-ideal internalization before self-objectification would have lower levels of eating disorder symptoms at 1-year follow-up assessments than participants in the two other groups (H10). Of the 56 participants who completed post-intervention SOQ and IBSS-R, and 1-year follow-up EDE-Q measures, 37 showed meaningful change in self-objectification before thin-ideal internalization and 19 showed meaningful change in thin-ideal internalization before self-objectification. Mean eating disorder symptoms at 1-year follow up for participants who showed meaningful change in self-objectification before thin-ideal internalization was 1.05 (*SD* = 0.91), and 1.64 (*SD* =1.09) for participants who showed meaningful change in thin-ideal internalization before self-objectification. A t-test indicated that this difference in eating disorder symptoms between groups was significant, $t(118) = 9.57$, $p < .001$, mean difference = .44. Therefore, individuals who showed meaningful change in self-objectification before thin-ideal internalization had significantly lower levels of eating disorder symptoms at 1-year follow-up than individuals who showed meaningful change in thin-ideal internalization before self-objectification.

In summary, results from the cross-sectional evaluation of structural models indicated that a direct feedback loops exists between self-objectification and thin-ideal internalization in the development of body dissatisfaction and disordered eating (H1). A longitudinal evaluation of the prevention program revealed that significant reductions in thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms were observed immediately following the intervention and were sustained through the 1-year follow-up assessment with the exception of self-objectification which only had significant reductions through the 5-month follow-up assessment (H2). Results from the longitudinal evaluation of the structural models provided further support for the direct feedback loop between thin-ideal internalization and self-objectification in the prediction of body dissatisfaction and eating disorder symptoms across time (H3, H4). Longitudinal examinations of changes in thin-ideal internalization and self-objectification from baseline to post-intervention predicting body dissatisfaction and eating disorder symptoms at 5-month and 1-year follow-up assessments indicated that changes in thin-ideal internalization and self-objectification did not significantly predict body dissatisfaction or eating disorder symptoms at 5-month or 1-year follow up assessments (H5-H8). Examination of temporal sequence of change between thin-ideal internalization and self-objectification indicated that temporal precedence between these two variables could not be established in the current sample (H9). Finally, participants who showed meaningful change in self-objectification before thin-ideal internalization had significantly lower levels of eating disorder symptoms at 1-year follow-up assessments (H10).

DISCUSSION

This study contributes to the current literature on the prevention of eating disorders by examining the integration of thin-ideal internalization and self-objectification in an eating disorder prevention program. Cross-sectional examination of a structural model indicated that thin-ideal internalization and self-objectification are equally predictive of one another in the development of eating disorder symptoms, suggesting that both of these variables should be directly targeted within prevention programs as they both play a major role in the development and maintenance of body dissatisfaction and disordered eating. Previous research examining the relationship between these two variables indicated that thin-ideal internalization predicted self-objectification (Moradi et al., 2005; Morry & Staska, 2001); however, these studies did not examine other possible directionality between these variables. Thin-ideal internalization and self-objectification were then found to predict body dissatisfaction which in turn predicts eating disorder symptoms, providing further support for equally targeting these variables within prevention programs. Contrary to existing literature, the structural model did not produce significant links between thin-ideal internalization and eating disorder symptoms (Forbes et al., 2005; Morry & Staska, 2001; Share & Mintz, 2002) or self-objectification and eating disorder symptoms (Moradi et al., 2005; Noll & Fredrickson, 1998). However, not all previous research has found direct links between self-objectification and thin-ideal internalization and eating disorder symptoms (Morry & Staska; Stice, 1996). These studies corroborate the findings of the current study

which suggests that body dissatisfaction plays a major role in the development of eating disorder symptoms by moderating or carrying the relationship between thin-ideal internalization and self-objectification and eating disorder symptoms. Further, participants in the current study had high mean levels of body dissatisfaction at baseline assessments lending further support to the important role that body dissatisfaction plays in the development of disordered eating. Thus, is may be important for prevention programs to target body dissatisfaction in addition to thin-ideal internalization and self-objectification.

Longitudinal analysis of the variables of interest after the implementation of a peer-led cognitive dissonance eating disorder prevention program revealed significant decreases in thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms at post-intervention, 5-month, and 1-year follow-up assessments with the exception of the 1-year follow-up assessment of self-objectification. This non-significant decrease in self-objectification 1-year after the intervention in combination with the significant relationship between self-objectification and thin-ideal internalization in predicting disordered eating provides further support for targeting self-objectification within prevention programs in order to sustain this change over longer periods of time. This is crucial in preventing disordered eating, as self-objectification has been consistently shown to be a predictor of eating disorder symptoms (Calogero, 2009; Daubenmier, 2005; Moradi et al., 2005; Noll & Frederickson, 1998; Tylka & Hill, 2004). While this particular decrease was no longer significant 1-year after the intervention, the overall results indicate that a peer-led

cognitive dissonance eating disorder prevention program is effective in reducing eating disorder symptoms and associated risk factors, as well as maintaining significant decreases over time. Additionally, results from this longitudinal analysis provide further support for the importance of body dissatisfaction in the development of disordered eating as participants mean levels of body dissatisfaction dropped significantly from baseline to post-intervention assessments.

The lack of significant reductions in self-objectification at 1-year follow-up assessments provides important implications for prevention programs. It is plausible that self-objectification is more difficult to change than thin-ideal internalization. This suggests that the behaviors of habitual body monitoring characteristic of self-objectification may be more difficult to alter than the maladaptive cognitions of needing to attain the thin-ideal body type proposed by society. Thus, prevention programs may need to have both behavioral-based and cognitive-based components to effectively target both self-objectification and thin-ideal internalization. These findings may also suggest that reductions in thin-ideal internalization are more important than changes in self-objectification in reducing overall eating disorder symptoms, as significant reductions in eating disorder symptoms were maintained through 1-year follow-up assessments even without the sustained reductions in self-objectification through 1-year follow-up assessments.

Longitudinal evaluation of thin-ideal internalization and self-objectification using path analysis indicated that the direct feedback loop between thin-ideal internalization and self-objectification was consistent among the models with the best fit to the data

indicating that this relationship is consistently mutual. The model examining the relationships among post-intervention thin-ideal internalization and self-objectification and 5-month follow-up body dissatisfaction and eating disorders indicated that for these time points, self-objectification significantly predicted eating disorder symptoms increasing the importance of targeting self-objectification within prevention programs. Additionally, post-intervention self-objectification still significantly predicted body dissatisfaction at 5-month follow-up, but this relationship was no longer significant at 1-year following the intervention. Collectively, this evidence supports the idea that both thin-ideal internalization and self-objectification should be targeted within eating disorder prevention programs in order to increase reductions in body dissatisfaction and eating disorder symptoms and sustain these reductions for greater lengths of time.

Longitudinal assessment conducted to determine if change in thin-ideal internalization and self-objectification separately predict body dissatisfaction and eating disorder symptoms at both 5-month and 1-year follow-up assessments indicated that, contrary to the hypotheses, change in thin-ideal internalization and self-objectification did not significantly predict body dissatisfaction or eating disorder symptoms for either 5-month or 1-year follow-up assessments. While previous studies on dissonance based prevention programs have found that thin-ideal internalization predicted body dissatisfaction and eating disorder symptoms at follow-up assessments (Seidel, Presnell, & Rosenfield, 2009; Stice et al., 2007), these studies assessed participant's thin-ideal internalization and eating disorder symptoms on a semi-weekly basis throughout the program. It is plausible that in order to detect significance in predicting eating disorder

symptoms and body dissatisfaction from change in thin-ideal internalization and self-objectification, data would need to be collected at more frequent intervals throughout the prevention program rather than being spread apart by several months. However, it is also possible that for the current sample, reductions in body dissatisfaction were more important for maintaining significant reductions in eating disorder symptoms as the baseline mean scores for body dissatisfaction were rather high for women in the current study. This would suggest that body dissatisfaction plays an important role in the development and maintenance of eating disorder symptoms and should also be targeted within prevention programs.

Exploration of temporal sequence of change between thin-ideal internalization and self-objectification revealed that meaningful change in thin-ideal internalization or self-objectification did not significantly predict meaningful change in the other variable. Contrary to the hypothesis, these results indicate that temporal precedence between these two variables cannot be established in the current sample. While this preliminary evidence provides additional support for the integration of self-objectification and thin-ideal internalization in prevention programs, further experimental research is needed to assess the cognitive acquisition of these two variables in order to clarify if temporal precedence can be established.

Finally, comparison of eating disorder symptoms at 1-year follow-up between participants who showed meaningful change in thin-ideal internalization before self-objectification and participants who showed meaningful change in self-objectification before thin-ideal internalization revealed that individuals who showed meaningful

change in self-objectification first had significantly lower levels of eating disorder symptoms at 1-year follow-up assessments. While these results also garner support for the inclusion of self-objectification within eating disorder prevention programs, they do not provide information on why some participants showed meaningful change in one variable before the other. These results suggest that there is some distinction between participants who show meaningful change in one variable before the other. Future research should attempt to identify specific reasons for why some women show meaningful change in one variable before the other, to determine if there are certain factors that should be screened for before implementing programs, as some techniques may be more effective for one subset of women over the other. Additionally, participants were not asked if they actually completed the mirror exposure homework exercise. It is plausible that women who completed this homework exercise were more likely to show meaningful change in self-objectification before thin-ideal internalization, which may influence the outcomes for these women. Future research should further examine the benefits of engaging in the mirror exposure exercise.

Limitations and Future Research

While the current study contributed to the literature on eating disorder prevention, its limitations should be addressed. The current sample was homogenous, consisting only of female participants enrolled in an undergraduate sorority. They were also predominantly White and from a similar geographic region, and all women were members of a college sorority. Therefore, our findings may not generalize well to other samples of women. However, even if the results from the current study are not

generalizable to other populations, the results do provide increased information about this particular population of undergraduate sorority women allowing researchers to tailor interventions specifically for this population. Future studies should examine the integration of thin-ideal internalization and self-objectification with disordered eating as well as the effectiveness of peer-led dissonance prevention programs in more diverse samples. Additionally, no males were included in this particular prevention program, and most eating disorder prevention programs are implemented in all female populations, as females are more likely than males to experience eating disorder symptoms and associated risk factors like thin-ideal internalization and self-objectification. However, even though men are less likely to experience disordered eating than women, they are still affected by this disorder (Hudson et al., 2007) and thus, should be included in studies evaluating prevention programs in order to determine if they are effective within male samples.

The current study also did not have a control group, preventing further examination of the effectiveness of the program. The use of a control group would allow for comparisons of intervention effects between the control group and the intervention group in order to interpret if the intervention produced reductions in eating disorder symptoms and risk factors above and beyond reductions in these symptoms for other reasons, such as external sources and regression to the mean. Future studies should examine the prevention program used in the current study with a control group in order to make these comparisons. Additionally, the current study did not examine all of the variables identified as risk factors for the development of disordered eating in the

dual pathway model, as negative affect and restrained eating were not measured. These factors are consistently examined in effectiveness studies of dissonance eating disorder prevention programs and could provide further information for the benefit of the program used in the current study if these variables were assessed. This would also allow for a more detailed examination of the integration of the dual pathway and self-objectification theory models. Future research should examine these variables within the current prevention program.

Another limitation of the current study was the use of participant's self-reported height and weight to calculate BMI for each participant. Previous research on BMI has indicated that for women, self-reported measurements of weight are lower than actual measurements weight for women, resulting in lower BMI's when calculated using self-report measurements (Jacobsen & DeBock, 2001). This suggests that BMI's calculated using self-report may not be accurate, and should therefore be interpreted carefully. However, most current research on dissonance prevention that has assessed BMI has used self-reported measurements.

Future research could continue to examine the integration of thin-ideal internalization and self-objectification within eating disorder prevention programs in order to determine the most effective way of reducing these risk factors and eating disorder symptoms in a variety of settings and conditions. If current prevention programs do not directly target both self-objectification and thin-ideal internalization, programs could be modified to include both variables, or new programs could be developed specifically for the inclusion of both of these variables to increase the

reduction of eating disorder symptoms and sustain this reduction for longer periods of time. Additionally, the booster sessions conducted after the prevention program was completed did not target self-objectification. Future research could examine if significant reductions in self-objectification could be sustained for longer periods of time if booster activities targeted both thin-ideal internalization and self-objectification. Booster activities could also target body dissatisfaction, as results from the current study indicate that it plays a major role in the development and maintenance of body dissatisfaction.

Additionally, the current study examined body dissatisfaction rather than body shame within the evaluation of the structural models. Many previous studies examining similar models included body shame rather than body dissatisfaction. While both of these variables represent discontent with overall body image, body shame, or shame an individual feels towards their body for not fulfilling cultural expectations of what her/his body should look like, is a facet of body dissatisfaction. Body dissatisfaction was used in the current study rather than body shame since body dissatisfaction has been found to be significantly associated with eating disorders and body shame is a component of body dissatisfaction. However, future studies should focus on further differentiating between these variables in order to determine if they are both in fact dimensions of body dissatisfaction.

Future research could also examine more specifically the distinction between self-objectification and thin-ideal internalization. Statistically these two variables are significantly related while remaining distinct from one another, but they share

similarities that should be carefully deconstructed. Information on how and why self-objectification and thin-ideal internalization are two distinct constructs would provide further information for researchers in the development of activities for prevention programs that specifically target each variable individually.

Conclusion

Results from the current study garnered support for the integration of thin-ideal internalization and self-objectification within eating disorder prevention programs. Additional evidence of the efficacy of peer-led cognitive dissonance based eating disorder prevention programs was also found by the significant reductions in eating disorder symptoms and associated risk factors after the implementation of the intervention. These decreases were mostly sustained across time, lending further support for the positive effects of dissonance prevention programs. These results also suggest that large scale change in thin-ideal internalization, self-objectification and body dissatisfaction is not required produce long-term reductions in eating disorder symptoms, as reductions of the variables in the current study were significant, but small. Overall results suggest that self-objectification, thin-ideal internalization, and body dissatisfaction all play a major role in the development of eating disorder symptoms and should be targeted equally and simultaneously within eating disorder prevention programs. The integration of these variables within prevention programs could provide increased reductions in eating disorder symptoms as well as maintaining these reductions over longer periods of time.

REFERENCES

Agliata, D., & Tantleff-Dunn, S. (2004). The impact of media exposure on males' body image. *Journal of Social and Clinical Psychology, 23,* 7-22. doi:10.1521/jscp.23.1.7.26988

Allison, K. C., & Park, C. L. (2004). A prospective study of disordered eating among sorority and nonsorority women. *International Journal of Eating Disorders, 35,* 354–358. doi:10.1002/eat.10255

Augustus-Horvath, C. L., & Tylka, T. L. (2009). A test and extension of objectification theory as it predicts disordered eating: Does women's age matter? *Journal of Counseling Psychology, 56,* 253-265. doi:10.1037/a0014637

Beauvois, J. L., & Joule, R. V. (1999). A radical point of view on dissonance theory. In E. Harmon-Jones, & Mills. (Eds.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (pp. 43-70). Washington, DC: American Psychological Association.

Becker, A. E., Grinspoon, S. K., Klibanski, A., & Herzog, D. B. (1999). Current concepts: Eating disorders. *The New England Journal of Medicine, 340,* 1092-1098. doi:10.1056/NEJM199904083401407

Becker, C. B., Bull, S., Chaumberg, K., Cauble, A., & Franco, A. (2008). Effectiveness of peer-led eating disorder prevention: A replication trial. *Journal of Consulting and Clinical Psychology, 76,* 347-354. doi:10.1080/10640260802371596

Becker, C. B., Ciao, A. C., & Smith, L. M. (2008). Moving from efficacy to

effectiveness in eating disorders prevention: The Sorority Body Image Program. *Cognitive and Behavioral Practice, 15*, 18-27. doi:10.1016/j.cbpra.2006.07.006

Becker, C. B., Smith, L. M., & Ciao, A. C. (2005). Reducing eating disorder risk factors in sorority members: A randomized trial. *Behavior Therapy, 36,* 245-253. doi:10.1016/S0005-7894(05)80073-5

Becker, C. B., Smith, L. M., & Ciao, A. C. (2006). Peer-facilitated eating disorder prevention: A randomized effectiveness trial of cognitive dissonance and media advocacy. *Journal of Counseling Psychology, 53,* 550-555. doi:10.1037/0022-0167.53.4.550

Brehm, J. W., & Cohen, A. R. (1962). *Explorations in cognitive dissonance.* New York, NY: Wiley.

Calogero, R. M. (2009). Objectification processes and disordered eating in British women and men. *Journal of Health Psychology, 14,* 394-402. doi:10.1177/1359105309102192

Calogero, R. M., Davis, W. N., & Thompson, J. K. (2005). The role of self-objectification in the experience of women with eating disorders. *Sex Roles, 52,* 43-50. doi:10.1007/s11199-005-1192-9

Calogero, R. M., & Jost, J. T. (2011). Self-subjugation among women: Exposure to sexist ideology, self-objectification, and the protective function of the need to avoid closure. *Journal of Personality and Social Psychology, 100,* 211-228. doi:10.1037/a0021864

Calogero, R. M., & Thompson, J. K. (2009). Potential implications of the objectification

of women's bodies for women's sexual satisfaction. *Body Image, 6,* 145-148. doi:10.1016/j.bodyim.2009.01.001

Carlat, D. J., & Camargo, C. A. (1991). Review of bulimia nervosa in males. *American Journal of Psychiatry, 148,* 831-843.

Cashel, M. L., Cunningham, D., Landeros, C., Cokley, K. O., & Muhammed, G. (2003). Sociocultural attitudes and symptoms of bulimia: Evaluating the SATAQ with diverse college groups. *Journal of Counseling Psychology, 50,* 287–296. doi:10.1037/0022-0167.50.3.287

Centers for Disease Control and Prevention (CDC). (2011). Healthy weight: Assessing your BMI: About adult BMI. Accessed at http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html on August 28, 2011.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Compas, B. E., Wagner, B. M., Slavin, L. A., & Vannatta, K. (1986). A prospective study of life events, social support, and psychological symptomatology during the transition from high school to college. *American Journal of Community Psychology, 14,* 241–257. doi:10.1007/BF00911173

Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating Disorders, 6,* 485-494. doi:10.1002/1098-108X(198707)6:4<485::AID-EAT2260060405>3.0.CO;2-O

Cusumano, D. L., & Thompson, J. K. (1997). Body image and body shape ideals in magazines: Exposure, awareness and internalization. *Sex Roles, 37,* 701-721. doi:10.1007/BF02936336

Daubenmier, J. J. (2005). The relationship of yoga, body awareness, and body responsiveness to self-objectification and disordered eating. *Psychology of Women Quarterly, 29,* 207-219. doi:10.1111/j.1471-6402.2005.00183.x

Drummond, M. (2002). Men, body image and eating disorders. *International Journal of Men's Health, 1,* 89-103. doi:10.3149/jmh.0101.89

Evans, C., & Dolan, B. (1993). Body Shape Questionnaire: Derivation of shortened "alternate forms." *International Journal of Eating Disorders, 13,* 315-321. doi:10.1002/1098-108X(199304)13:3<315::AID-EAT2260130310>3.0.CO;2-3

Fairburn, C. G. (2002). Cognitive-behavioral therapy for bulimia nervosa. In C. G. Fairburn & K. D. Brownell (Eds), *Eating disorders and obesity: A comprehensive handbook (2nd ed.)* (pp. 302-308). New York, NY: Guilford Press.

Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders, 16*(4)*,* 363-370.

Fairburn, C. G., & Cooper, Z. (1993). The Eating Disorder Examination (12th edition). In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment and treatment.* New York: Guilford Press.

Fairburn, C. G., Cooper, Z., Doll, H. A., O'Conner, M. E., Bohn, K., Hawker, D. M., Wales, J. A., & Palmer, R. L. (2009). Transdiagnostic cognitive-behavioral

therapy for patients with eating disorders: A two-site trial with 60-week follow-up. *The American Journal of Psychiatry, 166,* 311-319. doi:10.1176/appi.ajp.2008.08040608

Feingold, A., & Mazzella, R. (1998). Gender differences in body image are increasing. *Psychological Science, 9,* 190-195. doi:10.1111/1467-9280.00036

Festinger, L. (1957). *A theory of cognitive dissonance*. Oxford, England: Row, Peterson.

Forbes, G. B., Adams-Curtis, L., Jobe, R. L., White, K. B., Revak, J., Zivic-Becirevic, I., Pokrajac-Bulian, A. (2005). Body dissatisfaction in college women and their mothers: Cohort effects, developmental effects, and the influences of body size, sexism, and the thin body ideal. *Sex Roles, 53,* 281-298. doi:10.1007/s11199-005-5686-2

Franko, D. L., & Keel, P. K. (2006). Suicidality in eating disorders: Occurrence, correlates, and clinical implications. *Clinical Psychology Review, 26,* 769-782. doi:10.1016/j.cpr.2006.04.001

Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly, 21,* 173-206. doi:10.1111/j.1471-6402.1997.tb00108.x

Garner, D. M., Garfinkel, P. E., Schwartz, D., & Thompson, M. (1980). Cultural expectations of thinness in women. *Psychological Reports, 47,* 483-491.

Greenleaf, C. (2005). Self-objectification among physically active women. *Sex Roles, 52,* 51-62. doi:10.1007/s11199-005-1193-8

Greenleaf, C., & McGreer, R. (2006). Disordered eating attitudes and self-objectification

among physically active and sedentary female college students. *Journal of Psychology: Interdisciplinary and Applied, 140,* 187-198. doi:10.3200/JRLP.140.3.187-198

Grippo, K. P., & Hill, M. S. (2008). Self-objectification, habitual body monitoring, and body dissatisfaction in older European American women: Exploring age and feminism as moderators. *Body Image, 5,* 173-182. doi:10.1016/j.bodyim.2007.11.003

Haines, M. E., Erchull, M. J., Liss, M., Turner, D. L., Nelson, J. A., Ramsey, L. R., & Hurt, M. M. (2008). Predictors and effects of self-objectification in lesbians. *Psychology of Women Quarterly, 32,* 181-187. doi:10.1111/j.1471-6402.2008.00422.x

Heinberg, L. J., & Thompson, J. K. (1995). Body image and televised images of thinness and attractiveness: A controlled laboratory investigation. *Journal of Social & Clinical Psychology, 14*(4), 325-338.

Hill, M. S., & Fischer, A. R. (2008). Examining Objectification Theory: Lesbian and heterosexual women's experiences with sexual- and self-objectification. *The Counseling Psychologist, 36,* 745-776. doi:10.1177/0011000007301669

Hoffman, J. M., & Brownell, K. D. (1997). Sex differences in the relationship of body fat distribution with psychosocial variables. *International Journal of Eating Disorders, 22,* 139-145. doi:10.1002/(SICI)1098-108X(199709)22 :2<139 ::AID-EAT4>3.0.CO ;2-G

Hrabosky, J. I., & Grilo, C. M. (2007). Body image and eating disordered behavior in a

community sample of Black and Hispanic women. *Eating Behaviors, 8,* 106-114. doi:10.1016/j.eatbeh.2006.02.005

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1-55. doi:10.1080/10705519909540118

Hudson, J. I., Hiripi, E., Pope, H. G., & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the national comorbidity survey replication. *Biological Psychiatry, 61,* 348-358. doi:10.1016/j.biopsych.2006.03.040

Hurt, M. M., Nelson, J. A., Turner, D. L., Haines, M. E., Ramsey, L. R., Erchull, M. J., & Liss, M. (2007). Feminism: What is it good for? Feminine norms and objectification as the link between feminist identity and clinically relevant outcomes. *Sex Roles, 57,* 355-363. doi:10.1007/s11199-007-9272-7

Jacobson, B. H., & DeBock, D. H. (2001). Comparison of body mass index by self-reported versus measured height and weight. *Perceptual and Motor Skills, 92,* 128-132. doi:10.2466/PMS.92.1.128-132

Johnson, J. G., Cohen, P., Kasen, S., & Brook, J. S. (2002). Eating disorders during adolescence and the risk for physical and mental disorders during early adulthood. *Archives of General Psychiatry, 59,* 545-552. doi:10.1001/archpsyc.59.6.545

Kaye, W. H., Bulik, C., Thornton, L., Barbarich, N., & Masters, K. (2004). Comorbidity of anxiety disorders with anorexia and bulimia nervosa. *Archives of General Psychiatry, 161,* 2215-2221. doi:10.1176/appi.ajp.161.12.2215

Keel, P. K., Dorer, D. J., Eddy, K. T., Franko, D., Charatan, D. L., & Herzog, D. B. (2003). Predictors of mortality in eating disorders. *Archives of General Psychiatry, 60,* 179-183. doi:10.1001/archpsyc.60.2.179

Kline, R. B. (2010). *Principles and practices of structural equation modeling* (3rd ed.). New York: Guilford Press.

Lewinsohn, M. P., Striegel-Moore, R. H., & Seeley, J. R. (2000). Epidemiology and natural course of eating disorders in young women from adolescence to young adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry, 39,* 1284-1292.

Lucas, A. R., Beard, C. M., O'Fallon, W. M. & Kurland, L. T. (1991). 50-year trends in the incidence of anorexia nervosa in Rochester, Minn.: A population-based study. *American Journal of Psychiatry, 148,* 917-922.

Luce, K. H., & Crowther, J. H. (1999). The reliability of the Eating Disorder Examination – self-report questionnaire version (EDE-Q). *International Journal of eating Disorders, 25,* 349-351. doi:10.1002/(SICI)1098-108X(199904)25:3<349::AID-EAT15>3.0.CO;2-M

McKinley, N. M. (2004). Resisting body dissatisfaction: Fat women who endorse fat acceptance. *Body Image, 1,* 213-219. doi:10.1016/j.bodyim.2004.02.001

Mintz, L., & Betz, N. (1988). Prevalence and correlates of eating disordered behaviors among undergraduate women. *Journal of Counseling Psychology, 35,* 463-471. doi:10.1037/0022-0167.35.4.463

Mitchell, J. E., & Crow, S. (2006). Medical complications of anorexia nervosa and

bulimia nervosa. *Current Opinions in Psychiatry, 19,* 438-443.

Mitchell, K. S., Mazzeo, S. E., Rausch, S. M., & Cooke, K. L. (2007). Innovative interventions for disordered eating: Evaluating dissonance-based and yoga interventions. *International Journal of Eating Disorders,40,* 120-128. doi:10.1002/eat.20282

Mond, J. M., Hay, P. J., Rodgers, B., Owen, C., & Beumont, P. J. V. (2004). Beliefs of women concerning causes and risk factors for bulimia nervosa. *Australian and New Zealand Journal of Psychiatry, 38,* 463-469. doi:10.1111/j.1440-1614.2004.01384.x

Moradi, B., Dirks, D., & Matteson, A. V. (2005). Roles of sexual objectification experiences and internalization of standards of beauty in eating disorder symptomatology: A test and extension of Objectification Theory. *Journal of Counseling Psychology, 52,* 420-428. doi:10.1037/0022-0167.52.3.420

Moradi, B., & Subich, L.M. (2002). Perceived sexist events and feminist identity development attitudes: Links to women's psychological distress. *The Counseling Psychologist, 30*, 44-65. doi:10.1177/0011000002301003

Morrison, T. G., & Sheahan, E. E. (2009). Gender-related discourses as mediators in the association between internalization of the thin-body ideal and indicants of body dissatisfaction and disordered eating. *Psychology of Women Quarterly, 33,* 374-383. doi:10.1111/j.1471-6402.2009.01515.x

Morry, M. M., & Staska, S. L. (2001). Magazine exposure: Internalization, self-objectification, eating attitudes, and body satisfaction in male and female university students. *Canadian Journal of Behavioral Science, 33*(4), 267-279.

Muehlenkamp, J. J., & Saris-Baglama, R. N. (2002). Self-objectification and its psychological outcomes for college women. *Psychology of Women Quarterly, 26,* 371-379. doi:10.1111/1471-6402.t01-1-00076

Muth, J. L., & Cash, T. F. (1997). Body image attitudes: What difference does gender make ? *Journal of Applied Social Psychology, 27,* 1438-1452. doi:10.111/j.1559-1816.1997.tb01607.x

Muthén, L. K., & Muthén, B. O. (1998-2010). *Mplus user's guide.* (6th ed.). Los Angeles, CA: Muthén & Muthén.

Myers, T. A., & Crowther, J. H. (2007). Sociocultural pressures, thin-ideal internalization, self-objectification, and body dissatisfaction: Could feminist beliefs be a moderating factor? *Body Image, 4,* 296-308. doi:10.1016/j.bodyim.2007.04.001

Newman, D. L., Moffitt, T. E., Caspi, A., Magdol, L., Silva, P. A., & Stanton, W. R. (1996). Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. *Journal of Consulting and Clinical Psychology, 64,* 552-562. doi:10.1037/0022-006X.64.3.552

Noll, S. M., & Fredrickson, B. L. (1998). A mediational model linking self-objectification, body shame, and disordered eating. *Psychology of Women Quarterly*, 22, 623-636. doi:10.1111/j.1471-6402.1998.tb00181.x

O'Dea, J., & Abraham, S. F. (2002). Eating and exercise disorders in young college men. *Journal of American College Health, 50,* 273-278. doi:10.1080/07448480209603445

Park, D. C. (2007). Eating disorders: A call to arms. *American Psychologist, 62,* 158. doi:10.1037/0003-066X.62.3.158

Perez, M., Becker, C. B., & Ramirez, A. (2010). Transportability of an empirically supported dissonance-based prevention program for eating disorders. *Body Image, 7*, 179-186.doi:10.1016/j.bodyim.2010.02.006

Polivy, J., & Herman, C. P. (2002). Causes of eating disorders. *Annual Review of Psychology, 53*, 187-213. doi:10.1146/annurev.psych.53.100901.135103

Prichard, I., & Tiggemann, M. (2005). Objectification in fitness centers: Self-objectification, body dissatisfaction, and disordered eating in aerobic instructors and aerobic participants. *Sex Roles, 53,* 19-28. doi:10.1007/s11199-005-4270-0

Rand, C. S. W., & Kuldau, J. M. (1991). Restraint eating (weight concerns) in the general population and among students. *International Journal of Eating Disorders, 10,* 699–708. doi:10.1002/1098-108X(199111)10:6<699::AID-EAT2260100608>3.0.CO;2-0

Rodriguez, R., Marchand, E., Ng, J., & Stice, E. (2008). Effects of a cognitive dissonance-based eating disorder prevention program are similar for Asian

American, Hispanic, and White participants. *International Journal of Eating Disorders, 41,* 618-625. doi:10.1002/eat.20532

Roehrig, M., Thompson, J. K., Brannick, M., & van den Berg, P. (2006). Dissonance-based eating disorder prevention program: A preliminary dismantling investigation. *International Journal of Eating Disorders, 39,* 1-10. doi:10.1002/eat.20217

Rosen, J. C., Jones, A., Ramirez, E., & Waxman, S. (1996). Body Shape Questionnaire: Studies of validity and reliability. *International Journal of Eating Disorders, 20,* 315-319. doi:10.1002/(SICI)1098-108X(199611)20:3<315::AID-EAT>3.0.CO;2-Z

Seidel, A., Presnell, K., & Rosenfield, D. (2009). Mediators in the dissonance eating disorder prevention program. *Behaviour Research and Therapy, 47,* 645-653. doi:10.1016/j.brat.2009.04.007

Share, T. L., & Mintz, L. B. (2002). Differences between lesbians and heterosexual women in disordered eating and related attitudes. *Journal of Homosexuality, 42,* 89-106. doi:10.1300/J082v42n04_06

Shaw, H., Stice, E., & Becker, C. B. (2009). Preventing eating disorders. *Child and Adolescent Psychiatric Clinics of North America, 18,* 199-207. doi:10.1016/j.chc.2008.07.012

Silverstein, B., Perdue, L., Peterson, B., & Kelly, E. (1986). The role of the mass media in promoting a thin standard of bodily attractiveness for women. *Sex Roles, 14,* 519-532.

Slater, A., & Tiggemann, M. (2002). A test of objectification theory in adolescent girls. *Sex Roles, 46,* 343-349. doi:10.1023/A:1020232714705

Stice, E. (1994). Review of the evidence for a sociocultural model of bulimia nervosa and an exploration of the mechanisms of action. *Clinical Psychology Review, 14(7),* 633-661. doi:10.1016/0272-7358(94)90002-7

Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: Mediating effects of dieting and negative affect. *Journal of Abnormal Psychology, 110(1),* 124-135. doi:10.1037/0021-843X.110.1.124

Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin, 128*(5), 825-848. doi:10.1037/0033-2909.128.5.825

Stice, E., & Agras, W. S. (1998). Predicting onset and cessation bulimic behaviors during adolescence: A longitudinal group analysis. *Behavior Therapy, 29,* 257-276. doi:10.1016/S0005-7894(98)80006-3

Stice, E., Chase, A., Stormer, S., & Appel, A. (2001). A randomized trial of a dissonance-based eating disorder prevention program. *International Journal of Eating Disorders, 29,* 247-262. doi:10.1002/eat.1016

Stice, E., Marti, C. N., Shaw, H., & Jaconis, M. (2009). An 8-year longitudinal study of the natural history of threshold, subthreshold, and partial eating disorders from a community sample of adolescents. *Journal of Abnormal Psychology, 118,* 587-597. doi:10.1037/a0016481

Stice, E., Marti, N., Spoor, S., Presnell, K., & Shaw, H. (2008). Dissonance and healthy

weight eating disorder prevention programs: Long-term effects from a randomized efficacy trial. *Journal of Consulting and Clinical Psychology, 76,* 329-340. doi:10.1037/0022-006X.76.2.329

Stice, E., Mazotti, L., Weibel, D., & Agras, W.S. (2000). Dissonance prevention program decreases thin-ideal internalization, body dissatisfaction, dieting, negative affect, and bulimic symptoms: A preliminary experiment. *International Journal of Eating Disorders, 27,* 206-217. doi:10.1002/(SICI)1098-108X(200003)27:2<206::AID-EAT>3.0.CO;2-D

Stice, E., Nemeroff, C., & Shaw, H. (1996). A test of the dual pathway model of bulimia nervosa and an exploration of the mechanisms of action. *Journal of Social and Clinical Psychology, 15,* 340-363.

Stice, E., Ng, J., Shaw, H. (2010). Risk factors and prodromal eating pathology. *Journal of Child Psychology and Psychiatry, 51,* 518-525. doi:10.1111/j.1469-7610.2010.02212.x

Stice, E., Presnell, K., Gau, J., & Shaw, H. (2007). Testing mediators of intervention effects in randomized controlled trials: An evaluation of two eating disorder prevention programs. *Journal of Consulting and Clinical Psychology, 75,* 20-32. doi:10.1037/0022-0006X.75.1.20

Stice, E., Rohde, P., Gau, J., & Shaw, H. (2009). An effectiveness trial of a dissonance-based eating disorder prevention program for high-risk adolescents. *Journal of Consulting and Clinical Psychology, 77,* 825-834. doi:10.1037/a0016132

Stice, E., Rohde, P., Shaw, H., & Gau, J. (2011). An effectiveness trial of a selected

dissonance-based eating disorder prevention program for female high school students: Long-term effects. *Journal of Consulting and Clinical Psychology, 79,* 500-508. doi:10.1037/a0024351

Stice, E., & Shaw H.E. (1994). Adverse effects of the media portrayed thin-ideal on women and linkages to bulimic symptomatology. *Journal of Social and Clinical Psychology, 13*(3)*,* 288-308.

Stice, E., & Shaw, H. (2004). Eating disorder prevention programs: A meta-analytic review. *Psychological Bulletin, 130,* 206-227. doi:10.1037/0033-2909.130.2.206

Stice, E., Shaw, H., Burton, E., & Wade, E. (2006). Dissonance and healthy weight eating disorder prevention programs: A randomized efficacy trial. *Journal of Consulting and Clinical Psychology, 74,* 263-275. doi:10.1037/0022-006X.74.2.263

Stice, E., Shaw, H., & Nemeroff, C. (1998). Dual pathway model of bulimia nervosa: Longitudinal support for dietary restraint and affect-regulation mechanisms. *Journal of Social and Clinical Psychology, 17*(2)*,* 129-149.

Stice, E., Trost, A., & Chase, A. (2003). Healthy weight control and dissonance-based eating disorder prevention programs: Results from a controlled trial. *International Journal of Eating Disorders,33,* 10-21. doi:10.1002/eat.10109

Stice, E., Ziemba, C., Margolis, J., & Flick, P. (1996). The dual pathway model differentiates bulimics, subclinical bulimics, and controls: Testing the continuity hypothesis. *Behavior Therapy, 27,* 531-549. doi:10.1016/S0005-7894(96)80042-6

Stormer, S. M., & Thompson, J. K. (1995). Explanations of body image disturbance: A test of maturational status, negative verbal commentary, social comparison, and sociocultural hypotheses. *International Journal of Eating Disorders,* 19(2), 193-202. doi:10.1002/1098-108X(199501)17:1<81::AID-EAT2260170111>3.0.CO;2-Y

Strelan, P., & Hargreaves, D. (2005). Women who objectify other women: The vicious circle of objectification. *Sex Roles, 52,* 707-712. doi:10.1007/s11199-005-3737-3

Striegel-Moore, R. H., & Franko, D. L. (2002). Body image issues among girls and women. In T. F. Cash & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 183-191). New York, NY: Guilford Press.

Striegel-Moore, R. H., Leslie, D., Petrill, S. A., Garvin, V., & Rosenheck, R. A. (2000). One year use and cost of inpatient and outpatient services among female and male patients with an eating disorder: Evidence from a national database of health insurance claims. *International Journal of Eating Disorders, 27,* 381-389. doi:10.1002/(SICI)1098-108X(200005)27 :4<381::AID-EAT2>3.0.CO ;2-U

Striegel-Moore, R. H., Silberstein, L. R., Grunberg, N. E., & Rodin, J. (1990). Competing on all fronts: Achievement orientation and disordered eating. *Sex Roles, 23,* 697. doi:10.1007/BF00289257

Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment and treatment of body image disturbance.* Washington, DC: American Psychological Association.

Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current Directions in Psychological Science, 10,* 181-183. doi:10.1111/1467-8721.00144

Tiggemann, M. (2011). Mental health risks of self-objectification: A review of the empirical evidence for disordered eating, depressed mood, and sexual dysfunction. In R. Calogero, S. Tantleff-Dunn, & J. K. Thompson (Eds.), *Self-objectification in women: Causes, consequences, and counteractions* (pp. 139-159). Washington, DC: American Psychological Association.

Tiggemann, M., & Lynch, J. (2001). Body image across the lifespan in adult women: The role of self-objectification. *Developmental Psychology, 37,* 243-253. doi:10.1037/0012-1649.37.2.243

Tiggemann, M., & Slater, A. (2001). A test of objectification theory in former dancers and non-dancers. *Psychology of Women Quarterly, 25,* 57-64. doi:10.1111/1471-6402.00007

Tylka, T. L., & Hill, M. S. (2004). Objectification theory as it relates to disordered eating among college women. *Sex Roles, 51,* 719-730. doi:10.1007/s11199-004-0721-2

Wade, T., George, W. M., & Atkinson, M. (2009). A randomized controlled trial of brief interventions for body dissatisfaction. *Journal of Consulting and Clinical Psychology, 77,* 845-854. doi:10.1037/a0016879

Wilfley, D. E., Schreiber, G. B., Pike, K. M., & Striegel-Moore, R. H. (1996). Eating disturbance and body image: A comparison of a community sample of adult

Black and White women. *International Journal of Eating Disorders, 20,* 377-387. doi:10.1002/(SICI)1098-108X(199612)20:4<377::AID-EAT5>3.0.CO;2-K

Wilson, G. T., Becker, C. B., & Heffernan, K. (2003). Eating disorders. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology (2nd ed)* (pp. 687-715). New York, NY: Guilford Press.

Wilson, G. T., & Eldredge, K. L. (1992). Pathology and development of eating disorders: Implications for athletes. In K. D. Brownell, J. Rodin, & J. H. Wilmore (Eds.), *Eating, body weight, & performance in athletes: Disorders of modern society* (pp. 115-127). Philadelphia: Lea & Febiger.

Wiseman, M. A., Gray, J. J., Mosimann, J. E., & Ahrens, A. H. (1992). Cultural expectations of thinness in women: An update. *International Journal of Eating Disorders, 11,* 85-89. doi:10.1002/1098-108X(199201)11 :1<85::AID-EAT2260110112>3.0.CO ;2-T

Woodside, D. B., Garfinkel, P. E., Lin, E., Kaplan, A. S., Goldbloom, D. S., & Kennedy, S. H. (2001). Comparisons of men with full or partial eating disorders in the community. *American Journal of Psychiatry, 158,* 570-574. doi:10.1176/appi.ajp.158.4.570

APPENDIX

Table 1

Means and Standard Deviations for All Dependent Variables at Each Time Point and Correlations at Baseline Assessment

Measure	Baseline *M* (*SD*)	Post-Intervention *M* (*SD*)	5-Month FU *M* (*SD*)	1-Year FU *M* (*SD*)	1	2	3	4	5
1. BMI	21.16 (2.00)	21.08 (1.99)	21.52 (2.02)	21.59 (1.96)	------				
2. IBSS-R	3.43 (0.61)	2.94 (0.85)	3.30 (0.75)	3.19 (0.78)	.11	------			
3. SOQ	3.07 (14.07)	-3.74 (14.80)	0.17 (14.60)	1.90 (13.98)	.08	.33***	------		
4. BSQ	91.51 (32.51)	77.03 (29.25)	82.23 (28.55)	85.30 (28.64)	.37***	.45***	.49***	------	
5. EDEQ	1.60 (1.13)	1.22 (0.98)	1.36 (1.03)	1.43 (1.00)	.38***	.40***	.42***	.81***	----

Note. Correlations are from baseline assessment only. BMI = body mass index; IBSS-R = Ideal Body Stereotype Scale-Revised; SOQ = Self Objectification Questionnaire; BSQ = Body Satisfaction Questionnaire; EDEQ = Eating Disorder Examination Questionnaire; FU = follow-up assessment; $N_{baseline} = 177$; $N_{postintervention} = 169$; $N_{5\text{-}month} = 159$; $N_{1\text{-}year} = 105$.
***$p < .001$

Table 2
Results from Hierarchical Linear Models Examining Effects of Time on the Outcome Variables

Predictor	*B (SE)*	*t*	*df*	*p*	95% CI	PseudoR^2
Thin-ideal internalization (IBSSR)						0.121
Intercept	3.40 (0.05)	62.71	508	< 0.001	[3.30, 3.51]	
Post-Intervention	-0.46 (0.06)	-7.55	433	< 0.001	[-0.58, -0.34]	
5-Month FU	-0.13 (0.06)	-1.98	454	0.048	[-0.25, -.001]	
1-Year FU	-0.22 (0.07)	-3.03	469	0.003	[-0.36, -0.08]	
BMI	0.01 (0.02)	0.53	352	0.598	[-0.03, 0.05]	
Self-objectification (SOQ)						0.076
Intercept	2.53 (1.04)	2.43	485	0.016	[0.48, 4.58]	
Post-Intervention	-6.52 (1.14)	-5.73	424	< 0.001	[-8.75, -4.28]	
5-Month FU	-2.49 (1.18)	-2.10	445	0.036	[-4.81, -0.16]	
1-Year FU	-1.65 (1.36)	-1.21	459	0.227	[-4.32, 1.03]	
BMI	0.57 (0.36)	1.56	359	0.120	[-0.15, 1.28]	
Body Dissatisfaction (BSQ)						0.110
Intercept	91.83 (2.01)	45.49	423	< 0.001	[87.87, 95.80]	
Post-Intervention	-13.32 (1.94)	-6.86	417	< 0.001	[-17.13, -9.50]	
5-Month FU	-12.42 (2.03)	-6.13	435	< 0.001	[-16.41, -8.44]	
1-Year FU	-8.83 (2.34)	-3.77	445	< 0.001	[-13.44, -4.23]	
BMI	4.07 (0.72)	5.67	421	< 0.001	[2.66, 5.48]	
Eating disorder symptoms (EDEQ)						0.078
Intercept	1.64 (0.69)	23.68	415	< 0.001	[1.51, 1.78]	
Post-Intervention	-0.36 (0.07)	-5.45	412	< 0.001	[-0.49, -0.23]	
5-Month FU	-0.35 (0.07)	-5.06	431	< 0.001	[-0.49, -0.21]	
1-Year FU	-0.30 (0.08)	-3.78	440	< 0.001	[-0.46, -0.14]	
BMI	0.16 (0.02)	6.42	421	< 0.001	[0.11, 0.21]	

Note. BMI = body mass index; Intercept = baseline assessment; FU = follow-up assessment; Pseudo R^2 = effect size calculated as proportional reduction in variance; $N_{baseline}$ = 177; $N_{postintervention}$ = 169; $N_{5\text{-}month}$ = 159; $N_{1\text{-}year}$ = 105.

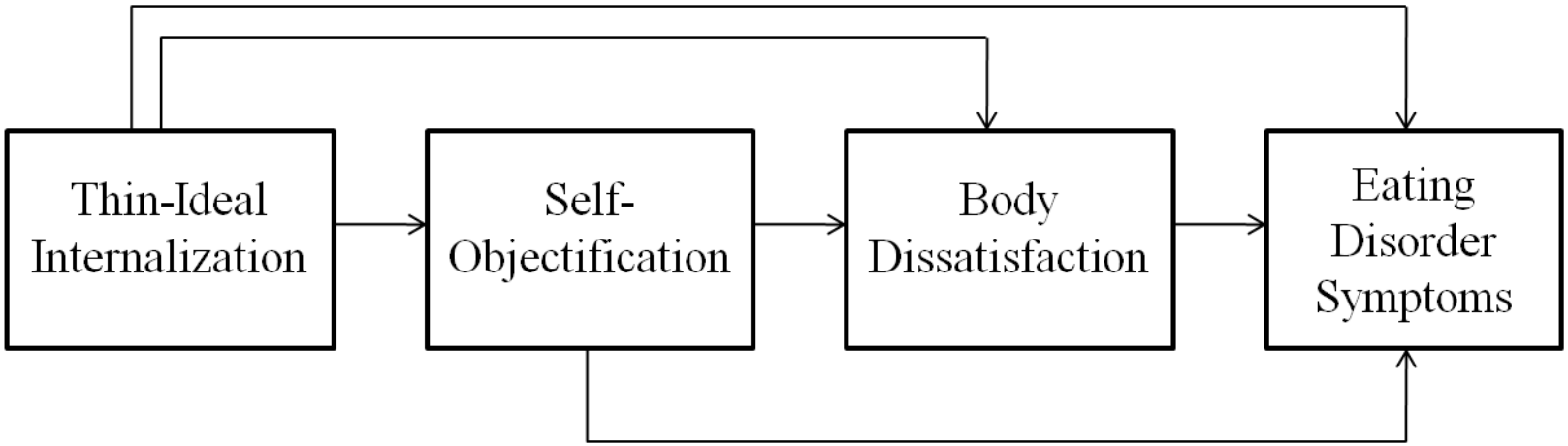

Figure 1a. Hypothesized structural model.

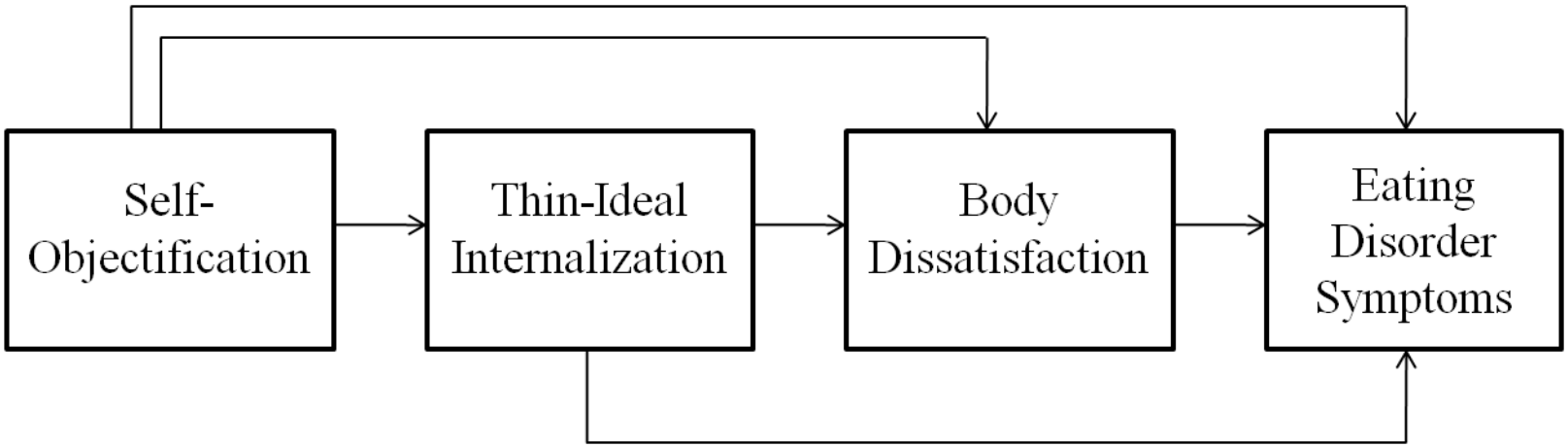

Figure 1b. Structural model examining if self-objectification predicts thin-ideal internalization.

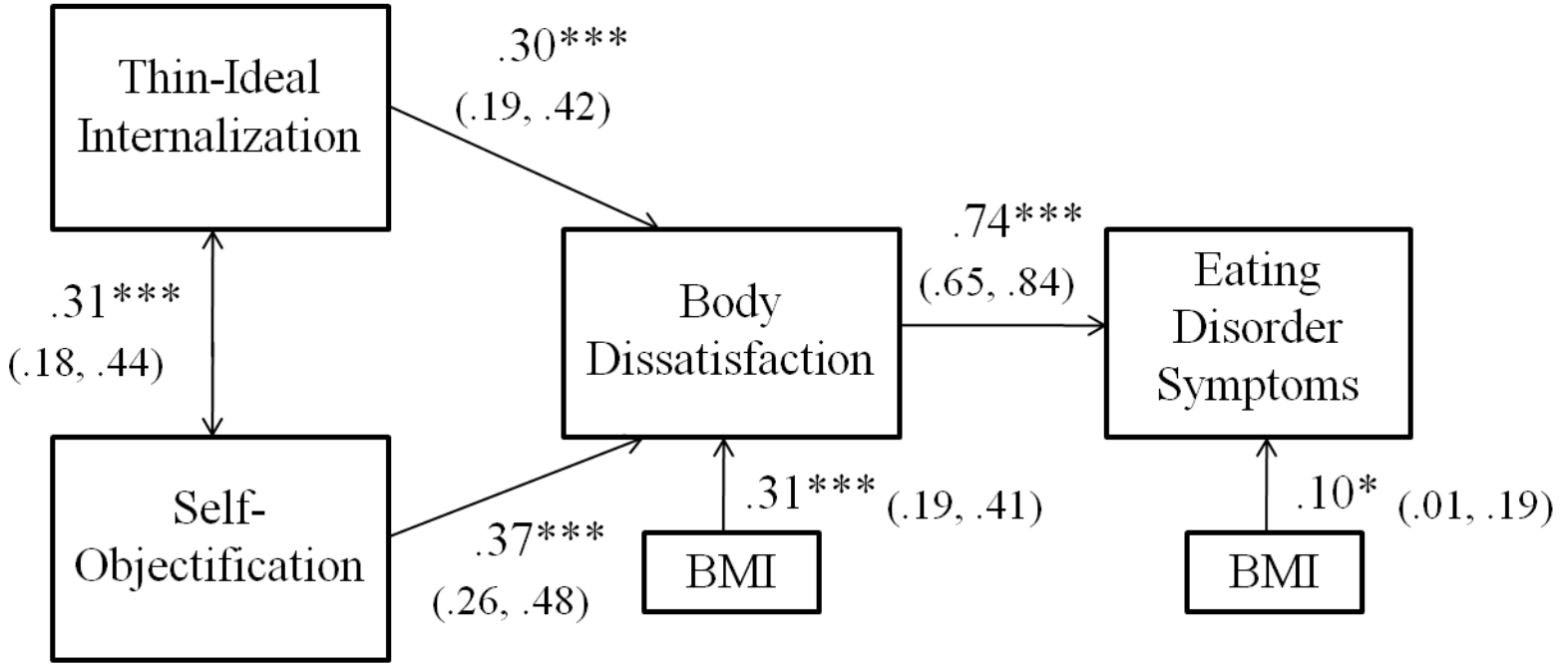

Figure 2. Final cross-sectional model examining links among variables of interest. Values reflect standardized path coefficients. Values in parenthesis reflect 95% confidence intervals. Note *$p < .05$, ***$p < .001$.

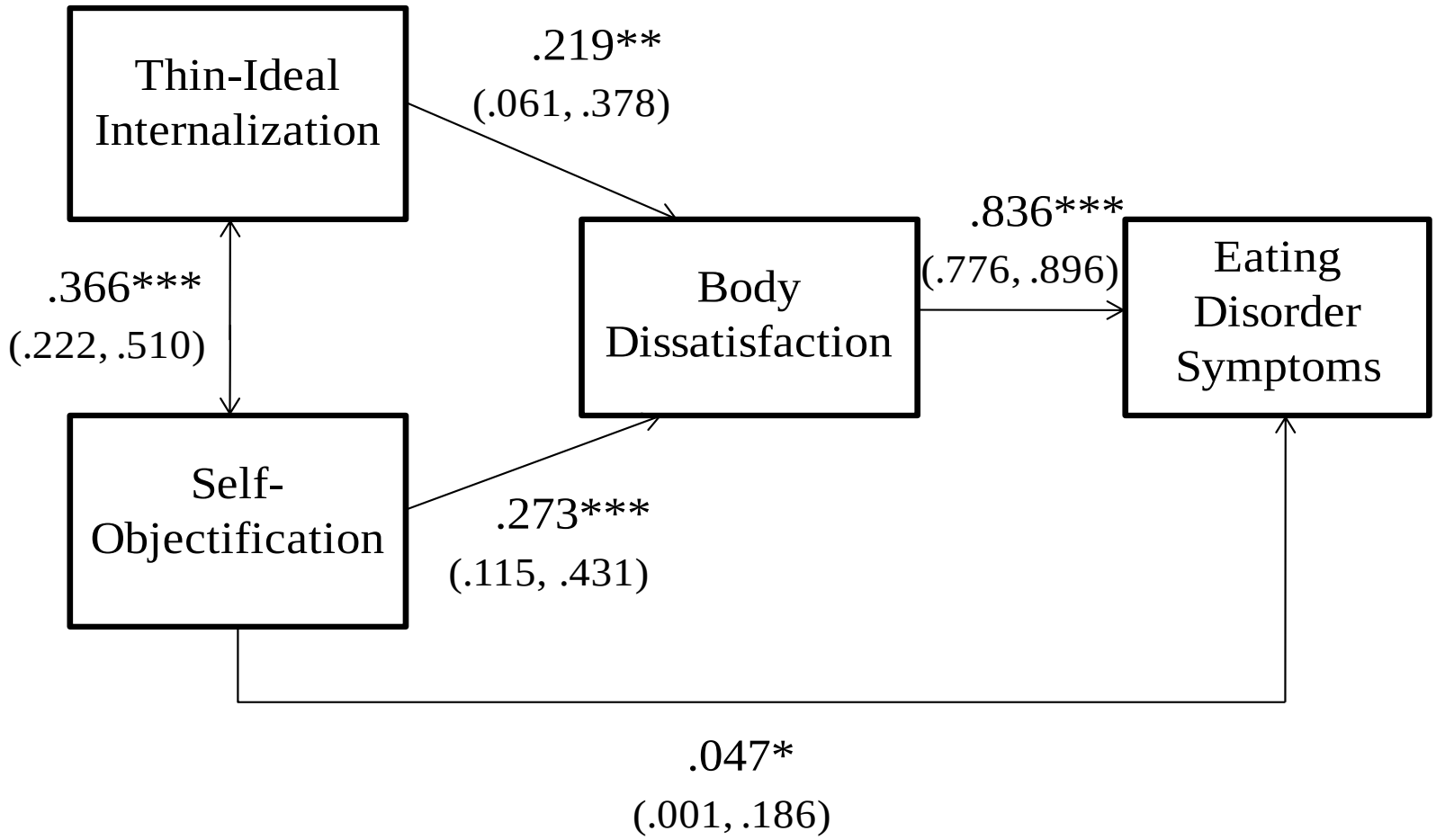

Figure 3. Final longitudinal model examining links among variables of interest at post-intervention 5-month follow-up assessments. Values reflect standardized path coefficients. Values in parenthesis reflect 95% confidence intervals. Note *p < .05, **p < .01,***p < .001.

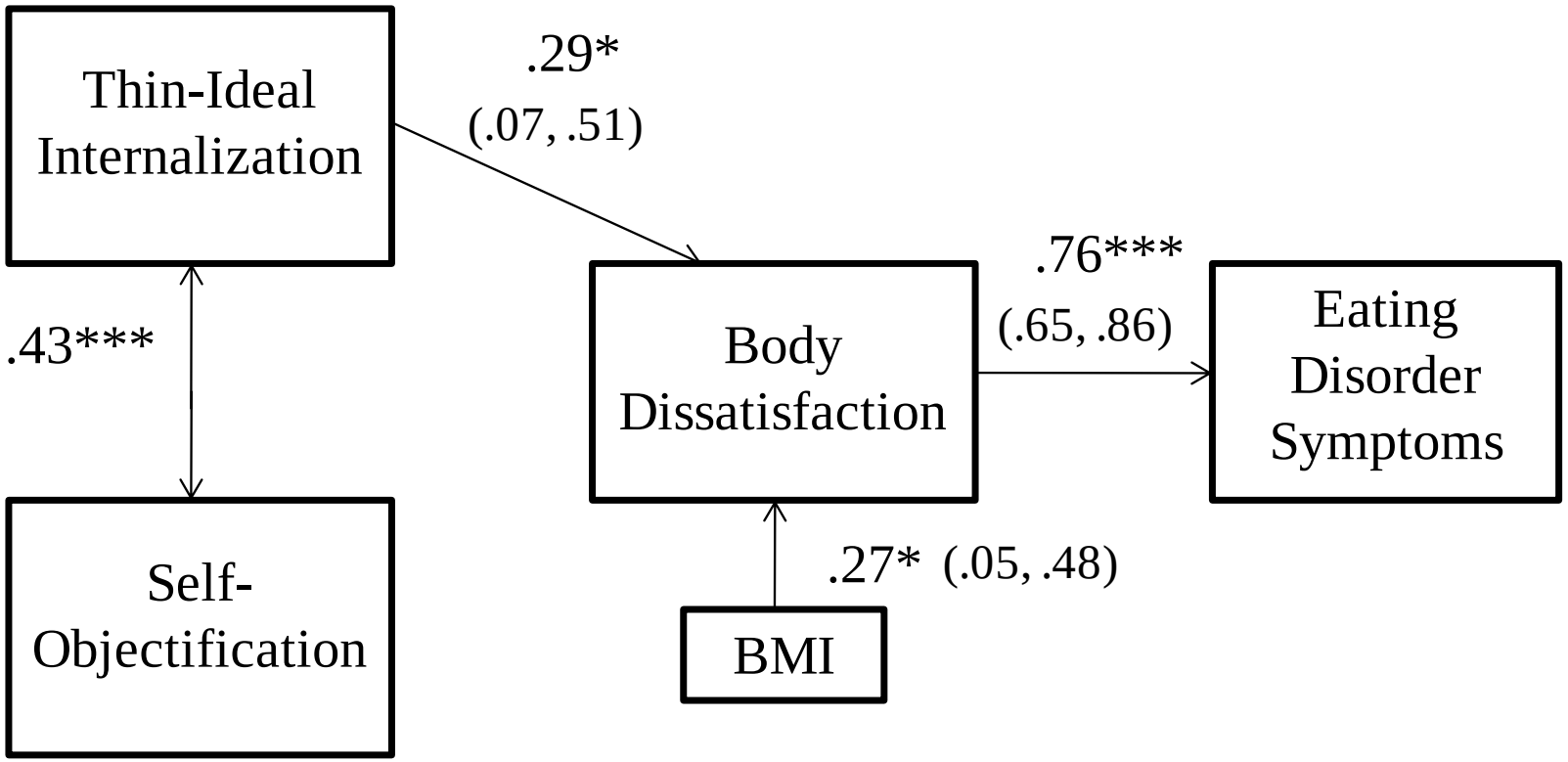

Figure 4. Final longitudinal model examining links among variables of interest at post-intervention and 1-year follow-up assessments. Values reflect standardized path coefficients. Values in parenthesis reflect 95% confidence intervals. Note *p < .05, ***p < .001.

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Kroon Van Diest, A. M., & Perez, M. (In press, 2011). *Prevention of eating disorders: A review.*

Kroon Van Diest, A. M., Perez, M., Taylor, A., & Coates, J. M. (2011). *The relationship between ethnicity, mental health symptoms, and aggression/victimization among a nationally representative sample of American youth.* Manuscript submitted for publication.

Kroon Van Diest, A. M. & Perez, M. (2011). *An alternate scoring method for the Self Objectification Questionnaire.* Manuscript submitted for publication.

Professional Presentations:

Kroon Van Diest, A. M., & Perez, M. (2011, November). *Integrating thin-ideal internalization and self-objectification within eating disorder prevention for women.* Poster to be presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, Toronto, Canada.

Tylka, T. L., Kroon Van Diest, A. M., Lumeng, J., & Eneli, I. (2010, May). *Adaptive maternal eating attitudes and behaviors: Associations with maternal BMI, child weight, and trust in child's internal cues.* Symposium presented at the annual meeting of the Pediatric Academic Society, Vancouver, BC, Canada.