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Evaluation of an Eating Disorders Prevention Curriculum on Eating Attitudes and Behaviors of Female College Students

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EVALUATION OF AN EATING DISORDERS PREVENTION CURRICULUM ON EATING
ATTITUDES AND BEHAVIORS OF FEMALE COLLEGE STUDENTS

By

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ABSTRACT

The evaluation of an eating disorders prevention curriculum on eating attitudes and behaviors of female college students. Purpose: The purpose of this study was to evaluate the efficacy of an academic college course on eating attitudes and behaviors of female college students. Methods: Two hundred and twenty female college students (19.4 ± 2.6 years old) participated in either the intervention (n = 76) or control (n = 144) and completed a pre-, post- and follow up (intervention only) survey that identified intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology. Intervention females participated in a 12-week academic curriculum based on cognitive behavioral techniques, cognitive dissonance and media literacy strategies. Cognitive behavior techniques included self monitoring, challenging irrational beliefs, monitoring of negative self-talk and positive counter statements, strategies to cope with anxiety, distress, panic and relapse prevention strategies. Cognitive dissonance techniques encouraged the participants to compare the inconsistency of their behaviors with their beliefs. Media literacy techniques invited the participant to become a critical evaluator of the media. Results: High and low risk intervention participants reported increased reliance on internal hunger and satiety cues, F (1, 76) = 4.51, p < .05, decreased restrained eating F (1, 76) = .12, p < .05, and an improvement on a more global measure of eating pathology F (1, 76) = 16.89, p < .001 at follow up. High risk intervention participants reported lower body dissatisfaction, F (1, 76) = 12.92, p < .001, reduced eating concerns F (1, 76) = 10.21, p < .001, reduced shape concerns, F (1, 76) = 11.08, p < .001 and reduced weight concerns F (1, 76) = 17.77, p < .001 at follow up. Conclusions: The results of the analyses indicate that the prevention program was effective in reducing risk factors associated with eating disorders. These findings suggest that a college academic curriculum may reduce eating disorder risk factors by increasing protective behaviors and decreasing harmful attitudes and behaviors among high risk females.
CHAPTER 1

INTRODUCTION

Roughly 6 -17% of college females have an eating disorder (Prouty, Protinsky & Canady, 2002; Schwitzer, Rodriguez, Thomas, & Salimi, 2001) but subclinical eating pathology is reportedly much higher. As many as 25-40% of female college students are concerned that their eating is out of control or worry about body image or weight and as much as 33% of female students are using harmful or risky eating behaviors (Schwitzer, Bergholz, Dore, Salimi, 1998). It has also been reported that as much as 63% have eating behavior problems consisting of chronic dieting, bingeing or purging (Mintz & Betz, 1988). Disordered eating can result in severe physical consequences and are associated with reduced confidence and self esteem, shame and other psychological problems (Stice, Killen, Hayward & Taylor, 1998; Taylor, Sharpe, Shisslak, Bryson, Estes, Gray, McNnight, Crago, Kraemer & Killen, 1998). Individuals with partial-syndrome eating disorders limit their intake of food, are preoccupied with their weight, and have other eating disorder symptoms and as many as 30% of collegiate women struggling with this disorder may go on to develop a full-syndrome eating disorder (Taylor, Bryson, Luce, Cunning, Doyle, Abascal, Rockwell, Dev, Winzelberg & Wilfley, 2006). Females are 10 times more likely than males to be affected by an eating disorder (Berger, Sowa, Bormann, Brix, & Strauss, 2008; Schwitzer et al., 1998). The transition to college appears to be a particularly high-risk time (Berger et al., 2008). The onset of eating disorders has been found to occur most often in women between the ages of 18 and 22 (Woodside & Garfinkel, 1992).

Risk factors of eating disorders are multifaceted and include sociocultural, psychological, and biological factors (Hill & Bhatti, 1995). Major risk factors include low self esteem, depression, sociocultural influences that model a thin-ideal, family dynamics, inappropriate eating behaviors such as repeated and extreme dieting, gender (being female), socioeconomic status, and genetic predispositions (Paxton, 1993). The etiology of eating disturbances may be partly attributed to the internalization of cultural values concerning the importance of what is associated with thinness and beauty. These socio-cultural values tend to influence weight concerns, attitudes toward eating and dieting.
Research indicates that particularly in women, exposure to media that promote a thin ideal of beauty is associated with body dissatisfaction, dieting and unhealthy eating (Field et al., 1999; Harrison & Cantor, 1997). Exposure to thinness-depicting media leads women to feel unhappy and dissatisfied with their bodies (Irving, 1990; Stice & Shaw, 1994). The unattainable body image is promoted to such an extent by the mass media that women may ultimately be pressured into eating disorder behaviors. Chronic dieting is also associated with body dissatisfaction as women realize that their own body does not conform to the socio-cultural ideal. Unless society begins to embrace a more realistic ideal, the incidence of disordered eating behaviors may continue to rise as they have in the past 20 years.

**Statement of the Problem**

Since the incidence of eating disorders is increasing rapidly it is important to develop, implement and evaluate programs aimed at primary and secondary prevention. Effective prevention programs must include the development of strategies to reduce risk factors and enhance protective factors. Risk factors identified in order for prevention programs to be efficacious include thin-ideal internalization, body dissatisfaction, dieting, negative affect and eating pathology (Shaw, Stice, Becker, 2009). Self-esteem has been identified as a protective factor that tends to increase the resistance and resiliency of individuals (Abood & Black, 2000; Gollings & Paxton, 2006; Hawks, Madanat, Smith, & De La Cruz, 2008; Phelps, Sapia, Nathanson, & Nelson, 2000; Sapia 2001). Eating disorder prevention programs have been evaluated with mixed results in the literature, therefore further research to address weight related attitudes and behaviors of college students is certainly warranted.

**Purpose of the study**

The purpose of this study is to evaluate the efficacy of an academic college course on eating attitudes and behaviors of college students.

**Main Research Question:** What is the influence of an eating disorders, body image and healthy weight maintenance curriculum on the behaviors and attitudes of female college students?
Primary objectives

Theme A: Effect of intervention on eating disorder behaviors

Theoretical hypothesis 1.1: Female college students involved in an academic course on eating disorders, body image and healthy weight maintenance will significantly increase intuitive eating and significantly decrease internal pressures to obtain a thin body, restrictive control over their eating, negative perceptions of their body, eating concerns, shape and weight concerns and harmful eating behaviors from pre-test to post-test. (Within subjects)

Operational hypothesis 1.1: Female college students involved in PET 3932 will significantly increase intuitive eating and significantly decrease the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology from pre-test to post-test.

Theoretical hypothesis 1.2: Female college students involved in an academic course on eating disorders, body image and healthy weight maintenance will have decreased levels of risk from pre-test to post-test compared to female college students involved in an academic course with no treatment conditions for internal pressures to obtain a thin body, restrictive control over their eating, negative perceptions of their body, eating, shape and weight concerns and harmful eating behaviors. (Within subjects)

Operational hypothesis 1.2: Female college students involved in PET 3932 will have decreased levels of risk from pre-test to post-test compared to female college students involved HUN 1201 on the following measures: intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology from pre-test to post-test.

Theme B: Effect of pre-test eating disorder risk on change in eating disorder behaviors and attitudes

Theoretical hypothesis 2: Female college students involved in an academic course on eating disorders, body image and healthy weight maintenance at higher risk of an eating disorder will have significantly greater increases in intuitive eating and greater reductions in internal pressures to obtain a thin body, restrictive control over their eating, negative perceptions of their body, eating, shape and weight concerns and harmful eating behaviors compared to all other female students (low risk intervention and control participants).
Operational hypothesis 2: Female college students involved in PET 3932 with higher pre-test BSQ survey scores will have significantly greater increases in intuitive eating and greater reductions on the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology compared to female college students involved in PET 3932 with lower pre-test BSQ scores and all female students involved in HUN 1201.

Theme C: Effects beyond termination of the intervention

Theoretical hypothesis 3: Female college students involved in an academic course on eating disorders, body image and healthy weight maintenance will maintain effects over 4 weeks (to one month follow up) on the following factors: intuitive eating, internal pressures to obtain a thin body, restrictive control over their eating, negative perceptions of their body, eating, shape and weight concerns and harmful eating behaviors.

Operational hypothesis 3: Female college students involved in PET 3932 will maintain effects from pre-test to follow up on the following measures: intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology.

Theme D: Effect of participation in the intervention on change in eating disorder behaviors and attitudes

Theoretical hypothesis 4: Female college students involved in an academic course on eating disorders, body image and healthy weight maintenance with the least number of absences and missed assignments will have significantly greater increases in intuitive eating and significantly greater reductions in internal pressures to obtain a thin body, restrictive control over their eating, negative perceptions of their body, eating, shape and weight concerns and harmful eating behaviors compared to female students with the most number of absences.

Operational hypothesis 4: Female college students involved in PET 3932 with the least number of absences and missed assignments will have significantly greater increases in intuitive eating and significantly greater reductions on the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology.

Theme E: Effect of formal counseling for eating issues on change in eating disorder behaviors and attitudes

Theoretical hypothesis 5.1: Female college students involved in an academic course on eating disorders, body image & healthy weight maintenance who report that they have received at least
2 counseling sessions with a health professional in the past 6 months will have significantly greater increases in intuitive eating and significantly greater reductions in internal pressures to obtain a thin body, restrictive control over their eating, negative perceptions of their body, eating, shape and weight concerns and harmful eating behaviors compared to female students who received less than 2 counseling sessions.

**Operational hypothesis 5.1:** Female college students involved in PET 3932 who report that they have received at least 2 counseling sessions with a health professional in the past 6 months will have significantly greater increases in intuitive eating and significantly greater reductions on the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology.

**Theoretical hypothesis 5.2:** Female college students with no treatment conditions who report that they have received at least 2 counseling sessions with a health professional in the past 6 months will have significantly greater increases in intuitive eating and significantly greater reductions in internal pressures to obtain a thin body, restrictive control over their eating, negative perceptions of their body, eating, shape and weight concerns and harmful eating behaviors compared to female students who received less than 2 counseling sessions.

**Operational hypothesis 5.2:** Female college students involved in HUN 1201 who report that they have received at least 2 counseling sessions with a health professional in the past 6 months will have significantly greater increases in intuitive eating and significantly greater reductions on the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology.

**Theme F: Effect of intervention on thoughts and actions**

**Theoretical hypothesis 5.1:** Female college students involved in an academic course on eating disorders, body image and healthy weight maintenance will report that each discussion and assignment will positively impact their attitudes and behaviors.

**Operational hypothesis 5.1:** Female college students involved in PET 3932 will report that the following discussions and assignments will positively impact their attitudes and behaviors: Nutrition and Exercise, Dietary Guidelines; Intuitive Eating; Dieting, Short and Long Term Effects; Dieting, Non-diet versus Diet Thinking; Eating Disorders, Diagnostic Criteria and Risk; Eating Disorders, Case Studies; Eating Disorders, How we Contribute; Eating Disorders, Raising Children; Self Awareness; Cultural Emphasis on Thinness, Thin-ideal; Societal Emphasis on
Definition of terms

**Anorexia**: an eating disorder primarily affecting adolescent girls and young women, characterized by pathological fear of becoming fat, distorted body image, excessive dieting, and emaciation.

**Body dissatisfaction**: dissatisfaction with one’s current body size and shape. This dissatisfaction may vary in intensity from mild dissatisfaction with particular regions of the body to extreme body shape disparagement.

**Bulimia nervosa**: an eating disorder also referred to as the “binge purge syndrome” that represents a disturbance in eating behavior mostly affecting young women of normal weight, characterized by frequent episodes of grossly excessive food intake followed by self-induced vomiting to avoid weight gain.

**Drive for thinness**: the degree to which an individual endorses and strives to achieve a slim standard of bodily attractiveness.

**Iatrogenic**: induced in a patient, by a practitioner’s activity, manner or therapy

**Intuitive (intrinsic, mindful) eating**: Eating based on physiological hunger and satiety cues rather than external and emotional cues (Tribole & Resch, 2003)

**Moderators**: important features found to be effective in producing strong intervention effects

**Partial-syndrome eating disorder**: mild eating disorder consisting of limiting food intake, preoccupation with weight, along with other eating disorder symptoms

Primary prevention – provided to individuals to avoid the onset of eating disorders through health protecting education and counseling.

**Secondary prevention**: identifies and treats asymptomatic individuals who have already developed risk factors. Referred to as “targeted prevention,” secondary prevention focuses on individuals who have clear precursors of an illness or disease.

**Thin-ideal internalization**: socio-cultural pressure to obtain a thin body
Assumptions

The majority of techniques described have been effective with college females in reducing eating disorder behaviors and attitudes with little to no evidence that these same techniques are effective with men who struggle with eating disorders (eg. thin ideal internalization). As this course is open to all majors and all students there was a possibility that males would register for the PET 3932 course. It was assumed that the majority of students who signed up for and registered for the course would be female. This was a fairly safe assumption given that other courses and eating disorder prevention programs advertised to students primarily if not always attracted females. However, if a sufficient number of males would have enrolled, comparison analysis would have been conducted.

The intervention may have had limited effects if the participants were not motivated to engage in the intervention, and ultimately the assignments and activities. This study assumed that students would be motivated to engage in the intervention activities and course curriculum in order to perform well in the course. Additionally, it was also assumed that the students taking the course would be willing to participate in the research study by completing the pre and post assessments.

Limitations

The first limitation relates to study design. A true experimental design consists of random assignment of participants to the intervention and comparison groups. Because students decide and register on their own to take a course, participants in the study were not randomly assigned to the intervention (PET 3932) or comparison group (HSC 4711).

If participants are absent for the in-class activities it may lessen the impact of the intervention, although these issues are likely to be randomly distributed across the treatment and comparison groups. Absenteeism cannot be avoided in a real-world classroom study, however, this was taken into account when analyzing the data.

Significance of study

College is generally the first step toward independence and reexamining or establishing lifestyle choices which makes this a great opportunity to implement healthful eating and exercise habits and positive attitudes towards oneself. Eating disorder prevention programs have had varied results in reducing eating disorder behaviors and attitudes in the college setting. Despite
many years of research in the prevention of eating disorders, the prevalence remains high and leads to severe complications and large numbers of individuals suffering from eating disorders. Fortunately, some promising prevention programs in a variety of formats have recently resulted in a reduction of risk factors associated with eating disorders. New prevention programs in the college setting which expand and build on the previously reported interventions may help improve future prevention programs.
CHAPTER 2

LITERATURE REVIEW

The prevalence of excessive weight concern, body dissatisfaction, and disordered eating patterns among female college students has been well documented (Drewnowski, Yee, Kurth & Krahn, 1994; Mann, Nolen-Hoeksema, Huang, Burgard, Wright & Hanson, 1997). Disordered eating can increase the risk of depression, anxiety, substance abuse, health problems and obesity (Johnson, Cohen, Kasen & Brook, 2002; Stice, Cameron, Killen, Hayward & Taylor, 1999) and often leads to more severe eating disorders (Killen et al., 1996; Killen, Taylor, Hayward & Wilson, 1994; Taylor et al., 1998). Successful primary and secondary prevention programs to reduce eating disorder risk factors are highly sought out by health professionals, counseling center staff and student affairs personnel on college campuses.

Primary prevention is provided to individuals to avoid the onset of eating disorders through health protecting education and counseling. Secondary prevention identifies and treats asymptomatic individuals who have already developed risk factors. Referred to as “targeted prevention,” secondary prevention focuses on individuals who have clear precursors of an eating disorder such as very negative body image (Neumark-Sztainer et al, 2006). Research studies have evaluated prevention programs with adolescents and even middle-school aged children, but the college age years have been identified as an ideal time to address eating disorder prevention (Cooley & Toray, 2001). Eating disturbances are overwhelmingly present among college women (Mann et al., 1997) suggesting the need for a college-level intervention (Stice & Ragan, 2002).

Eating disorders remain a public health problem as these issues are self-destructive, they lead to other psychological and mental conditions (Stice et al., 1998) and they are an academic impediment, particularly for college students. A prevention program in the format of an academic course appears to be an ideal way to reach high risk students. In the following review, interventions are described along with various approaches and components proven to be successful in decreasing eating disorder behaviors and attitudes among female college students.

A search was conducted on PubMed, PsychINFO, and ERIC databases using the keywords “eating disorder prevention program,” “eating disorder prevention,” “college,” and
“university.” In addition, the reference lists of pertinent articles were also scanned for relevant prevention programs. Studies were included if they consisted of eating disorder prevention programs in group approaches (rather than individual) with college females, from 1999-2009. Unpublished dissertations were not included. The search yielded a total of 35 research studies of interventions that examined the effects of eating disorder behaviors and attitudes and body image of college students before and after involvement in a program. Studies included both face to face group interventions and computer-based interventions. Prevention programs were included if they were evaluated in controlled trials. Trials were included if participants were randomly assigned to an intervention or to a minimal intervention, placebo, waitlist, or assessment only control condition or if there was a relevant comparison group used (e.g., matched controls) in a quasi-experimental design. Studies were included if they tested whether the change in the outcomes over time was significantly greater in the intervention group versus the control group. The criteria used to measure success in an eating disorder prevention program for college students included one or more well-established risk factors (Shaw et al., 2009) consisting of thin-ideal internalization, body dissatisfaction, dieting, negative affect and eating pathology.

Most studies attempting to prevent eating disorders in the university setting have been limited by small sample sizes. All but one of these programs included women as participants, and this study did not report any significant effects among males. Most of the studies included high risk groups such as student-athletes, sorority members, targeted females with elevated eating disorder scores, or students who were attracted to the program by fliers on campus. Only seven of the studies used universal audiences that included students at low or no risk. For the most part, program duration varied in each program from a single session intervention to a full semester course. Half of the programs used a minimum of eight weeks, with five programs consisting of a full semester (10-16 week) curriculum. The other half of the programs studied employed between 1-4 sessions. A previous review found that multiple session and longer-term interventions were more effective than single session interventions (Stice & Shaw, 2004) and the current review also found effectiveness in prevention programs of at least 8 weeks in duration. Maximal prevention effects also seem to occur for people who are most at risk for the problem as noted in some of the studies (Stice, Chase, Stormer & Appel, 2001). Over 70% of the studies included a follow up test (25/35) of at least 1 week and three were up to 12 months.
Moderators, important features found to be effective in producing strong intervention effects have been identified in previous meta-analytic reviews (Shaw et al., 2009; Stice, Shaw & Marti, 2007) examining eating disorder prevention programs for various populations. Effective moderators include targeting high risk females, older than 15 years of age, and using interactive body acceptance or dissonance-induction interventions with trained interventionists (Shaw et al., 2009; Stice et al., 2007). In the college setting, effective moderators seem to include targeting high risk populations with interactive components, length of program (longer in duration) and content (self-esteem, stress management, nutrition, dieting, body image, exercise and eating disorders) seems to have an effect on program success. To develop effective health education and health promotion programs that improve body image and decrease dieting, disordered eating, and other harmful behaviors of university students, several effective options for the approach and delivery of interventions have emerged throughout the literature (Yager & O'Dea, 2008). These include educational approaches and theory based components including media literacy, cognitive dissonance, cognitive behavior techniques, experiential learning, and other behavioral techniques (Hawks et al., 2008; Sepulveda, Carrobles, Gandarillas, Poveda, Pastor, 2007; Springer & Winzelberg, 1999; Stice, Orjada & Tristan, 2006; Stice & Ragan 2002)

**Eating Disorder Prevention in College Courses**

“Body Traps: Perspectives on Body Image” was one of the earliest studies to evaluate the effects of a formal academic course on eating disorder behaviors and attitudes (Springer & Winzelberg, 1999). Classes included guest lectures, student panels, multimedia programs and discussions related to body image and the media, the history of beauty, evolutionary aspects of attractiveness, adolescent development, cosmetic surgery, anorexia, bulimia and obesity. Students wrote “reaction” papers expressing thoughts, feelings and criticisms on assigned readings. Discussions on nutrition and healthy weight regulation strategies were avoided in order to de-emphasize weight preoccupation and dieting behavior. This intervention improved body image and disordered eating behaviors and attitudes. Despite a moderate sample of 24 participants, the results were significant relative to a comparison intervention from another trial. This research study was one of the first to show that an academic course addressing topics relating to body image could result in decreased eating disorder attitudes and behaviors among female college students that took the class.
Another study evaluated the effects of a college course entitled, “Eating Disorders” on female students’ disordered eating attitudes and behaviors (Stice & Ragan, 2002). The course included didactic presentations on the pathology, epidemiology and treatment of eating disorders and obesity. Group discussions on the thin-ideal and on deceptive techniques used in the mass media were also included. Participants in the intervention showed significant decreases in thin-ideal internalization, body dissatisfaction, dieting, eating disorder symptoms and body mass from pretest to posttest (Stice & Ragan, 2002). This research study despite promising results had a small intervention sample size (n=17) with an additional 3 matched controls to each intervention participant. Percent variance explained with the dependent variables ranged from 0.1 to 14.5 (p < .01). A replication of this preliminary trial intended as an eating disorder and obesity prevention program, consisted of another 15-week college course on eating disorders with a similar curriculum that included 25 participants and 70 matched comparisons (Stice et al., 2006). Several discussion-based exercises were intended to be therapeutic including critical discussions of the culturally sanctioned thin ideal of feminine beauty and extended discussions of the deceptive techniques used to create thin-ideal images in magazines and advertisements (photo touchups). Results showed a significant reduction in thin-ideal internalization, body dissatisfaction, dieting and eating disorder symptoms as well as less weight gain at post-test and 6-month follow up.

A more recent study of a 3 credit hour course developed to evaluate the effect of a health promotion program for eating disturbances and body dissatisfaction entitled, “Healthy Eating Workshops” included both male (n = 19) and female (n= 51) medical students with an additional 65 students serving as a control group (Sepulveda et al., 2007). Participants were offered workshops as a course credit and were required to complete and submit a Book of Personal Activities, used to evaluate the participants’ personal development and knowledge of the program content. Participants were identified high risk or low risk depending on their Eating Disorder Inventory (EDI) scores, with non-participants included as a control group. The course did not include detailed information on eating disorders, but instead addressed beliefs, attitudes and behaviors that intervene in the development of an eating disorder in an unspecific way. The program did not have a clinically significant effect in the male participants, but had significant improvements among the high risk females with a significant group x time interaction in drive for thinness and body dissatisfaction among females. Overall, students were satisfied with the workshop, and reported that the class dynamics helped them to learn more about
themselves and increased their self-esteem, as well as provided them with a “bigger picture” of the mass media’s influence on body image.

Another effective 3-credit undergraduate course implemented a variety of strategies to promote behavior change (Hawks et al., 2008). The goals of the course were to help students resist media pressure, modify restrictive dieting in favor of hunger-based eating, master the components of healthy self-esteem, and develop a positive body image. The Health Belief Model, a model that attempts to explain and predict health behaviors based on perceived susceptibility, severity, benefits, and barriers was used. In high dieter and low dieter groups, restrictive dieting decreased significantly. The percent change for the high-dieting group was significantly higher than that for the low-dieting group. Both groups increased hunger-based eating (intrinsic eating), and decreased short-term dieting and dietary restraint. For most measures, the level % of positive change was equally distributed among students, (~75% had improvements). The high-dieting group had the largest change in restrictive dieting behaviors and attitudes.

Interventions via college course offerings were all successful in reducing eating disorder attitudes and behaviors in college students. These programs all consisted of a semester long program, but varied in study population and educational components utilized. Participants self selected into the “Body Traps” course and the “Eating Disorders” seminar as the two interventions included a targeted population with heightened eating disorder scores at baseline. The “Body Image, Self Esteem and Healthy Weight Management” course and the “Healthy Eating Workshops” included students with both high dieting and low dieting tendencies at baseline. Both resulted in a greater reduction in restrictive eating behaviors and attitudes in the high dieting group. The three studies that incorporated education regarding the negative effects of dieting resulted in a reduction in dieting behaviors. Three of the studies which addressed thin-ideal in the media in the course curriculum resulted in a decrease in thin-ideal internalization. All courses resulted in a decrease in body dissatisfaction and disordered eating behaviors.

Non-academic eating disorder prevention programs include a range of content areas such as body image, self esteem, stress management, nutrition and goal setting among other topics that have been successful in decreasing eating disorder behaviors and attitudes among female college students. These content areas are embedded within certain theoretical frameworks that
include cognitive dissonance theory, cognitive-behavioral techniques, media literacy, social learning theory, social cognitive theory, and interventions implemented using computers.

**Non-course Eating Disorder Prevention Programs**

**Media Literacy.** Media literacy education among university students has typically involved the viewing and discussion of a video presentation. A study by Posovac and colleagues, 2001 found that participants had a decrease in weight concerns after a single video viewing (Posavac, Posavac, & Weigel, 2001). While Watson and Vaughn (2006) found that discussion following a video viewing had a greater effect on decreasing thin-ideal internalization than simply viewing the video without discussion. This study also found that body dissatisfaction was further reduced with four weekly discussions following the video viewing (Watson & Vaughn, 2006). Longer duration media literacy interventions may yield more pronounced effects than shorter ones due to the greater opportunity for participants to discuss, synthesize, and act upon the material (Stice & Ragan, 2002). Additionally, two media literacy interventions, each consisting of one single session only, resulted in no change in eating disorder attitudes or behaviors (Irving & Berel, 2001; Mutterperl & Sanderson, 2002).

Media literacy helps media recipients become active, conscientious consumers and independent, critical thinkers (Coughlin & Kalodner, 2006) as there is evidence that the media reinforces the value of the thin ideal. Health education programs that employ media literacy techniques presume that promoting a critical evaluation of the media will reduce its credibility and persuasive influence (Irving & Berel, 2001). ARMED (Acknowledging and Rejecting the Media’s influence on Eating and body image Disturbance), a media literacy program presented to female college students also discussed the thin ideal, techniques used to create ideal images, and cognitive strategies to challenge media messages (Coughlin & Kalodner, 2006). Harmful activities such as making social comparisons were discouraged and participants were asked to identify functional and positive aspects of their bodies. Eight weeks after participating in the 2-session media literacy program, college women at high-risk for eating disorders reported significant reduction in body dissatisfaction, drive for thinness, feelings of ineffectiveness, and internalization of societal standards of beauty compared to control participants who were also at high risk. Participants at low risk for an eating disorder did not report significant changes in study measures over time. Media literacy techniques have also reduced dietary restraint in high
risk participants in other interventions with effects continuing for up to eight months (Becker, Bull, Schaumberg, Cauble & Franco, 2008). Only participants at highest risk for an eating disorder show improvements in body satisfaction (Becker, 2008) and dietary restraint (Becker, 2008; Becker, Smith & Ciao, 2005) with media literacy techniques. Whereas there does not seem to be an effect on low risk participants (Coughlin & Kalodner, 2006).

**Cognitive Dissonance.** The theory of cognitive dissonance proposes that when there is an inconsistency or dissonance between an individual’s health beliefs and behaviors, the resulting discomfort will motivate them to change their attitude or behaviors to reduce this inconsistency (Festinger & Carlsmith, 1959) (Stice, Mazotti, Weibel & Agras, 2000). This approach has been used in some studies that compared a media literacy component with a cognitive dissonance intervention (Becker et al., 2008; Becker, Smith & Ciao, 2005; Becker, Smith & Ciao, 2006). In targeting the internalization of the thin-ideal, dissonance based programs attempt to induce cognitive dissonance in participants by having them argue against the culturally prescribed thin-ideal beauty standard, which is thought to lead to a shift in attitudes and to produce behavioral change (Shaw et al, 2009; Stice et al., 2000; Green, Scott, Diyankova, Gasser & Pederson, 2005). Cognitive dissonance techniques also include performing counter-attitudinal exercises that consist of standing in front of a mirror and listing only positive attributes (Stice et al., 2001; Becker et al., 2008; Becker et al., 2005, 2006), role-playing activities and convincing others to give up pursuit of the thin-ideal (Stice et al., 2001; Becker et al., 2005, 2006, 2008). Programs with highly interactive interventions that include cognitive dissonance techniques tend to have a greater reduction on thin-ideal internalization than media literacy techniques in more than one study with sorority women (Becker et al., 2005, 2006). Some studies found that cognitive dissonance and media literacy techniques were comparably effective in reducing eating disorder pathology (Becker et al., 2005, 2008) with effects remaining at 8-month follow up (Becker et al., 2006). Both techniques were also comparably effective in reducing thin-ideal internalization but those effects tended to fade over time with sorority women (Becker et al., 2008).

A study by Stice and colleagues, 2000 examined the effects of a 3-session cognitive dissonance intervention on female undergraduates with a delayed-intervention (wait-list) control condition (Stice et al., 2000). Participants were asked to create a body acceptance program for high school females by discussing ways that teenagers can avoid internalizing the thin ideal. This intervention resulted in decreased body dissatisfaction, bulimic symptoms, dieting, negative
affect and thin-ideal internalization at 1-month follow up. Another study compared the effects of randomly assigning participants to either a dissonance-based intervention or a healthy weight management placebo control condition (Stice et al., 2001). The cognitive dissonance intervention was similar to that in the previous study but included an activity where participants were asked to examine their reflection in a full-length mirror and record positive aspects. Discussions addressed ways that they might be unwittingly promoting the thin-ideal. Participants were encouraged to partake in behavioral challenges relating to body image concerns. The healthy weight management control condition consisted of incorporating a balanced diet and regular moderate exercise to result in weight control and body satisfaction. Both groups had a reduction in dieting and negative affect. The healthy weight control group had a reduction in bulimic symptoms, fat consumption and body mass at post-intervention and a reduction in thin-ideal internalization and body dissatisfaction at 4 week follow up. This group also had increased exercise at follow up. The dissonance intervention group had a reduction in body dissatisfaction and thin-ideal internalization. A possible explanation for similar results was that the researchers inadvertently developed an effective placebo control condition. The healthy weight management control intervention applied established behavioral principles to help participants make a permanent lifestyle change involving a healthy low fat diet and moderate exercise.

Compared to a 6-week yoga program, the cognitive dissonance program was replicated and, presented in a 6-week intervention unlike the previous study with 3 sessions (Mitchell, Mazzeo, Rausch, & Cooke, 2007). Results found a significant reduction in body dissatisfaction, disordered eating and drive for thinness in the cognitive dissonance group but no effects for the yoga intervention.

Compared with a wait-list control group, another intervention lead to similar results in a study using a single cognitive dissonance session or a single healthy eating and exercise session in which participants shared concerns with thin-ideal thinking and body image (Matusek, Wendt, & Wiseman, 2004). Participants had a reduction in thin-ideal internalization, body dissatisfaction, and eating pathology.

An additional study by Roehrig, Thompson, Brannick & Van den Berg (2006) examined a multifaceted program that contained counter-attitudinal advocacy and behavioral exposure components with a dismantled version (one that contained cognitive dissonance activities only and no educational exercises) to investigate the mechanisms involved in symptom reduction. The
dismantled version consisted only of the specific dissonance component (i.e., the counterattitudinal advocacy procedure) (Roehrig et al., 2006). Participants shared examples and concerns with thin-ideal thinking and body image, and used the mirror to report personal body image concerns and challenges, but problems with body image concerns and reasons for joining the group were not included. Both groups saw reductions in body dissatisfaction, bulimic symptoms, dieting behaviors, negative effect and thin-ideal internalization.

Cognitive dissonance techniques were also used in a study that included an activity to address a letter to an adolescent girl struggling with body image issues (Green et al., 2005). Asymptomatic and symptomatic participants were randomly assigned to a high level dissonance, low level dissonance or no-treatment control. The high level dissonance condition participants were told that their views would be expressed publicly, and that they were to expend a high level of effort on all tasks. This group was compared to a low level dissonance group where the perception focused on lower effort expenditure and voluntary participation, as attitudes would be kept private and anonymous and would not be shared. Post-intervention eating disorder scores were lower among participants in the high level dissonance condition compared to participants in the low level dissonance condition but eating disorder attitudes and behaviors were not significantly lower among participants in either intervention condition compared to no-treatment control participants.

**Social Learning/Cognitive Behavior Theories.** A self-esteem approach toward the prevention of body image and eating problems has been widely used (Yager & O'Dea, 2008). This approach is based on the self-efficacy component of Bandura’s Social Learning Theory and Social Cognitive Theory (Bandura, 1977) that to change health behavior, individuals must have the required personal skills, perceptions and degree of self-efficacy to do so. Low self-esteem, as opposed to high self efficacy, is known to be a risk factor for body dissatisfaction, dieting and eating disorders among individuals (Stice & Ragan, 2002; Yager & O'Dea, 2008). One 8-week health education study encouraged self efficacy and self esteem in college student-athletes, focusing on health-promoting attitudes and behaviors (Abood & Black, 2000). The program was designed to increase awareness and skills for developing positive health states and to learn how these states enhance athletic performance. The intervention did not concentrate on pathogenic weight loss methods in order to reduce the likelihood that some participants might use this information inappropriately or exacerbate existing tendencies related to developing an eating
disorder. Topics included self-esteem, stress management, nutrition and goal setting. A significant decrease in drive for thinness and body dissatisfaction was achieved.

An earlier 8-week program included similar components with discussions about realistic weight goals, healthy eating habits and negative effects of dieting. Cognitive behavior techniques were used that challenged negative thinking and encouraged healthier ways of coping (Kaminski & McNamara, 1996). Other discussions addressed perfectionism, depression, self esteem, assertive communication strategies, and societal pressures that lead to negative body image. This program resulted in a reduction of thin-ideal internalization, body dissatisfaction, dieting and negative affect at post-test and 5-week follow up.

Two other interventions to reduce maladaptive weight management practices in college women employed another aspect of the Social Learning Theory of personality by encouraging an internal locus of control (students’ belief that they can control events that affect them). The first study consisted of an 8-week didactic-style approach with discussions that addressed dieting, physical activity, the importance of regular meals and snacks, food avoidance, and body image (O'Brien & LeBow, 2007). The second (Phelps et al., 2000) used a combination of methods in 4 sessions that also included activities to increase self esteem. In addition to these skill building techniques, both of these interventions integrated a media literacy component that encompassed discussion of the thin-ideal, the role of the media, peers and family. The first study found the strongest effect size was observed with a reduction in body and shape concerns (O'Brien & LeBow, 2007). The second program also resulted in a reduction in body dissatisfaction, harmful dieting behaviors (fasting, excessive exercise, purging, diet pills, etc) and increased self-esteem and personal efficacy (Phelps et al, 2000). Another 4-session curriculum used similar techniques that employed the skill-building techniques (locus of control) along with discussions involving socio-cultural pressures, genetic determinants of body size and shape, healthful eating and exercise (Sapia, 2001). This study did not result in decreased body dissatisfaction, but it did result in a decreased drive for thinness and decreased harmful weight loss methods. The program also resulted in increased physical, personal and social self concept.

Cognitive behavioral therapy, another psychotherapeutic approach stemming from Social Cognitive Theory, aims to influence dysfunctional emotions, behaviors and cognitions through a goal-oriented, systematic procedure. Shorter prevention programs that employed cognitive-behavioral body image techniques have found to be less effective as evidenced in a one-session
intervention targeting average risk college age women (Nicolino et al., 2001). This intervention had no effect on body image, fear of fat or anxiety concerning physical appearance. Another one-session cognitive-behavior intervention resulted in a very small effect with decreased dieting only (Martz & Bazzini, 1999).

**Computer-based Programs.** Although not a theoretical approach in itself, presenting health education programs through a computer-based medium offers a unique health promotion opportunity (Yager & O'Dea, 2008). Computer-based interventions can provide anonymity and confidentiality and a simple delivery method that may be effective with students unwilling to seek face to face help for eating pathology issues. *Student Bodies*, a multimedia intervention was developed with a primary goal to reduce body dissatisfaction and excessive weight concerns (Winzelberg, Taylor, Sharpe, Eldredge, Dev & Constantinou, 1998). The program is modeled after “The Road to Recovery” program for bulimics and includes cognitive behavioral therapy exercises. The components of the program include readings on body image, nutrition, exercise, and eating disorders; a body image journal to track thoughts and feelings; and a discussion group.

Several iterations of the program have been developed and improved upon. The first model used a CD-ROM and resulted in a 53% usage rate by participants (Winzelberg et al., 1998). The second model (Winzelberg et al., 2000) was web-based, incorporated an electronic bulletin board, and used assistants to call participants each week and encourage them to complete sections that they had missed. In the third model, participants were given assignments, reminded each week to complete the assignments, required to post messages regularly and were provided with feedback to their responses (Zabinski et al., 2001). These programs resulted in a significant improvement in students’ body image and excessive concern with weight and body shape (Winzelberg et al., 2000; Celio et al., 2000).

A fourth model (Celio et al., 2000; Low, Charanasomboon, Lesser, Reinhalter & Martin, 2006) used the same structure as the third model but added weekly e-mail reminders, course credit and an off-line academic component with weekly body image readings and reflection papers. This iteration also included three face-to-face meetings during the program, and participants’ pictures and goals were placed on the web site. Outcomes included the prevention of the onset of bulimic behaviors, reducing drive for thinness, and reducing weight and shape concerns which were maintained at 9 month follow up. This model was the most effective model
in reducing body dissatisfaction (Low, Charanasomboon, Lesser, Reinhalter & Martin, 2006). Another study that included a longer follow up to this intervention found that a reduction in weight concerns with this program persists up to 12 months (Taylor et al., 2006).

The use of discussion boards and personal journal entries were later added in another study which also resulted in a reduction of dietary restraint (Manwaring et al., 2008). Participants who visited more screens and entered more body image and personal journal entries had lower restraint scores at post-treatment and these changes were sustained after 1 year, but the number of discussion board postings made and read did not predict change in eating disorder attitudes and behaviors.

The “Set Your Body Free Group Body Image Program” consisted of small groups lead by a therapist who discussed readiness to change, the relationship to body image and self esteem, social pressures to be thin, and the role of body comparisons (Gollings & Paxton, 2006). An internet version of the same curriculum was delivered through a chat room and included a discussion board. The face to face version had equal effects as the internet version with the exception of resulting in a greater reduction on extreme weight loss behaviors (crash dieting, fasting, skipping meals, using laxatives, diuretics, etc) than the internet version. The internet and face to face body image and eating disorder prevention programs were equally effective in reducing binge eating, body dissatisfaction and dietary restraint.

Another computer-based program titled, “Food, Mood and Attitude” (FMA) an eating disorder risk reduction program consisted of a 2-hr CD-ROM program (Franko et al, 2005). This randomized experimental design was based on cognitive behavioral and interpersonal models of eating disorder etiology. Specific program components were designed to provide both information and an interactive experience on learning about and reflecting on eating disorder risk factors. Decreases were found with excessive exercise, internalization of social and cultural attitudes toward appearances, overeating and shape and weight concerns in women who were at risk. Both low and high risk participants showed an increase in knowledge. No changes were found with dietary restraint, self-induced vomiting or laxative abuse. A more recent study examined the effect of the FMA program along with two 2-hour discussion groups with Latino women (Franko & George, 2008). These two 2-hour group sessions discussed risk factors for eating disorders and their experience using FMA. The results found a decrease in body dissatisfaction, binge eating and weight and shape concerns.
Summary. A potential of over 60% of female college students struggling with eating disordered behavior justifies an urgent health promotion response. The university environment is an ideal location to develop and facilitate health promotion initiatives aimed at protecting students against the harmful effects of eating disorders. This review highlighted several components within eating disorder prevention interventions that effectively reduce eating disorder behaviors and attitudes of female college students. In summary, when designing prospective prevention programs, five central considerations should be emphasized. First, ample sample size should be stressed, as stronger effects may be determined with more participants involved in the intervention. These prevention programs are also an ideal opportunity to reach out to a large population of high risk female college students. Second, promoting a prevention program with titles such as “Eating Disorders” or “Body Image” informs the population of the curriculum and allows those at highest risk to self select into the intervention. Although women at reduced risk may benefit from a diverse eating disorder prevention curriculum, women at higher risk are more likely to see the greatest reductions in eating pathology. Third, many programs that produced promising effects did not include a follow up which makes it difficult to determine whether effects persist following post-treatment. Fourth, future researchers should employ a variety of techniques and build on successful content and design features including cognitive dissonance theory, cognitive-behavioral techniques, media literacy, social learning theory, social cognitive theory, the health belief model and interventions implemented using computers as all have indicated effectiveness with female college students. Various topics should be utilized related to self esteem, stress management, nutrition, dieting, body image, exercise, eating disorders, media and socio-cultural pressures for attractiveness. Specific components may influence particular risk factors and predictors of eating pathology, for example, studies that included a component on dieting tended to have a reduction in dieting behaviors. Finally, longer duration sessions should be considered as it allows participants the time to absorb and process the content. Longer sessions that included a body image component resulted in a reduction of body dissatisfaction. Media literacy and cognitive dissonance approaches also tend to be more successful in reducing thin-ideal internalization in longer duration programs. An academic course allows an ideal amount of time to address a range of components while employing a variety of techniques to elicit attitude and
behavior change. A multi-faceted prevention program with a variety of components, in the format of an academic course appears to be an ideal way to reach high risk students.
CHAPTER 3

METHODOLOGY

**Pilot Study.** A 4-week pilot study was conducted with college students enrolled in a Wellness course in order to identify how the students would respond to the curriculum and the assignments. An additional purpose of the pilot was to identify the most appropriate survey instruments in order to measure the outcome of the curriculum on eating attitudes and behaviors.

**Subjects.** Approval was granted by the “Human Subjects Committee” here at Florida State University in the officially designated Institutional Review Board for the pilot study. At the time of the study, there were two sections of the wellness course. One section of the Wellness course consisting of both males (n=9) and females (n= 37) received the curriculum and the other section of the Wellness class that received their usual curriculum consisted of a similar audience of males (n=14) and females (n=31). Surveys were administered to a total of 91 college students in the comparison and intervention classes. The instructor for both sections of the Wellness class explained the procedures of the study and obtained informed consent from all participants.

**Procedures.** The brief, 20 minute surveys were distributed to the intervention class prior to implementing the eating disorder curriculum and the same surveys were distributed to the comparison class that same day. Students were informed that their input was needed to evaluate the effects of a nutrition, eating disorders, and body image curriculum on attitudes and behaviors as they relate to their body and their relationship with eating. Those students in the experimental group were informed that they would be presented with a 4-week curriculum. Cognitive behavior techniques, cognitive dissonance and media literacy were the overarching approaches from which basic nutrition, dieting and eating disorders were presented. Those in the comparison class were informed that they would receive the wellness class curriculum as usual. Participants were asked to complete a brief (5-10 minute) survey now and in 4 weeks. Participants were also informed that the surveys would be anonymous and would in no way influence their grade in the course. The curriculum for the pilot study including learning objectives, reading assignments and in class activities were as follows for the intervention students:
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities and Readings</th>
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<tbody>
<tr>
<td><strong>Nutrition Objectives</strong>&lt;br&gt;Students will be able to:&lt;br&gt;Identify the macronutrients.&lt;br&gt;Identify functions of protein, carbohydrates and fats.&lt;br&gt;List consequences of low carbohydrate diet&lt;br&gt;Identify the Dietary Guidelines for Americans&lt;br&gt;Identify principles of healthy eating and regular exercise</td>
<td>Homework: Keep 24 hour food &amp; exercise journal. Activities: List your top (10) reasons for pursuing a healthy lifestyle. Using your food and exercise journal, record (at least) one healthy change you plan to make.</td>
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<tr>
<td><strong>Eating Disorders</strong>&lt;br&gt;Students will be able to:&lt;br&gt;Identify criteria for anorexia nervosa, bulimia, binge eating disorders, EDNOS and body dysmorphic disorder.&lt;br&gt;Identify “fasting” as a risk factor for binge eating and bulimia&lt;br&gt;Identify that eating disorders during adolescence are associated with physical and mental conditions in adolescence and early adulthood.&lt;br&gt;Identify that higher BMI scores have been associated with several disordered eating behaviors</td>
<td>Stice, E., Davis, K., Miller, N.P. &amp; Marti, C.N. (2008) Fasting Increases Risk for Onset of Binge Eating and Bulimic Pathology: A 5-year Prospective Study. <em>Journal of Abnormal Psychology</em>, 117, 941-946. Johnson, G.J., Cohen, P., Kasen, S., &amp; Brook, J.S. (2002) Eating Disorders During Adolescence and the Risk for Physical and Mental Disorders During Early Adulthood. <em>Archives of General Psychiatry</em>, 59, 545-552.</td>
</tr>
<tr>
<td><strong>The Role of the Media in Body Image Concerns Objectives</strong>&lt;br&gt;Students will be able to:&lt;br&gt;Define and differentiate between “experimental” and “correlational” research.&lt;br&gt;Identify that brief exposure to media images with the thin-ideal often leads to negative body image in women&lt;br&gt;Identify that media use is related to increased eating disorder symptoms</td>
<td>Grabe, S., Ward, L.M., &amp; Hyde, J.S. (2008). The Role of the Media in Body Image Concerns Among Women: A Meta-Analysis of Experimental and Correlational Studies. <em>Psychological Bulletin</em>, 134, 460-476. View and discuss Jean Kilbourne film “Killing Us Softly Softly III”</td>
</tr>
<tr>
<td><strong>Cultural and Societal Emphasis on Thinness Objectives</strong>&lt;br&gt;Students will be able to:&lt;br&gt;List factors that contribute to the thin-ideal.&lt;br&gt;Define “thin-ideal internalization”&lt;br&gt;List costs or negative health effects that may occur as a result of thin-ideal internalization&lt;br&gt;List the media as a source of the thin-ideal.&lt;br&gt;Differentiate between “healthy ideal” and “thin ideal.”&lt;br&gt;List consequences in attempting the thin ideal.</td>
<td>Thompson, J.K. &amp; Stice, E.(2001). Thin-Ideal Internalization: Mounting Evidence for a New Risk Factor for Body-Image Disturbance and Eating Pathology. <em>Current Directions in Psychological Science</em>, 10, 181-183. Discuss examples from your life concerning pressures to be thin (or muscular, etc). How do: statements keep the thin ideal going, challenging the way you talk about your body impact how you feel about your body, others respond to you. (Body Project Stice &amp; Presnell, 2007).</td>
</tr>
</tbody>
</table>
Measures. Four measures were used on the survey including the Ideal Body Stereotype Scale – Revised (IBSS-R) (Stice, Fisher, Martinez, 2004) to measure thin-ideal internalization, the Satisfaction and Dissatisfaction with Body Parts Scale (Berscheid, Baron, Dermer, & Libman, 1973) to measure body dissatisfaction, the Dutch Restrained Eating Scale (DRES) (VanStrien T, Frijters, Van Staveren & Defares, 1986) to measure dieting and the Perceived Sociocultural Pressure Scale (Stice, Nemeroff & Shaw 1996). Participants responded to 8 items in the Ideal Body Stereotype Scale – Revised instrument using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items were summed for all scales in this pilot. This scale had acceptable internal consistency ($\alpha = .91$) (Stice, Fisher, Martinez, 2004) and ($\alpha = .81$) (Stice, Orjada, Tristan, 2006) and test-retest reliability ($r = .80$) (Stice et al., 2004). This scale had an alpha coefficient of ($\alpha = .73$) during the pre-test and ($\alpha = .76$) for the post-test in the current sample. The Satisfaction and Dissatisfaction with Body Parts Scale asks participants to indicate their level of satisfaction with 9 body parts using a 5-point scale from 1 (extremely dissatisfied) to 5 (extremely satisfied). This scale had acceptable internal consistency ($\alpha = .94$) (Stice et al., 2004) and ($\alpha = .92$) (Stice et al., 2006). It also had acceptable test-retest reliability ($r = .90$) (Stice et al., 2004). This scale had an alpha coefficient ($\alpha = .91$) during the pre-test and an alpha coefficient ($\alpha = .94$) in the post-test in the current sample. Participants indicated their frequency of dieting behaviors on the Dutch Restrained Eating Scale (DRES) using a 5-point scale ranging from 1 (never) to 5 (always). The DRES had good internal consistency ($\alpha = .95$) and test-retest reliability ($r = .82$) (Stice et al., 2004). This scale had an alpha coefficient ($\alpha = .92$) during the pre-test and ($\alpha = .92$) during the post-test in the current sample. Participants reported the amount of pressure they received from family, friends, dating partners and the media on the Perceived Sociocultural Pressure Scale. Cronbach’s alphas were .87 for the full scale and a pilot study revealed 2-week test-re-test coefficients of .93 for the full scale (Stice et al., 1996).

Results of Pilot Study. At the end of the 4-week intervention, post-tests were administered to both the intervention and the comparison students. A total of 87 students completed all sections of the pre-test (44 intervention and 43 comparison), and an additional 4 students completed most of the survey. Where there was incomplete measurement data, all other parts of the survey were used in the analysis. One-way ANOVA’s indicated that there were no differences between the means of the pre-test scores of the comparison and the pre-test scores of the intervention
participants’ age, thin-ideal internalization, body dissatisfaction, restrained eating, and perceptions of support networks.

A total of 60 students completed all sections of the post-tests (31 intervention and 29 comparison), and an additional student completed most of the survey. ANOVA results revealed that only the values on the *Ideal Body Stereotype Scale – Revised* \((F (1, 59) = 6.75, p < .01)\) decreased significantly between the pre-test and post-test in the intervention participants but not in the comparison participants. The Levine test was not significant; therefore the homogeneity of variance was not violated. The means and standard deviations for the dependent measures of the pre-test and post-test are listed in Table 1.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-test Mean (SD)</th>
<th>Post-test Mean (SD)</th>
<th>ANOVA p-value</th>
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<tbody>
<tr>
<td>Thin-ideal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>3.50 (.40)</td>
<td>3.26 (.52)</td>
<td>(p = .01)</td>
</tr>
<tr>
<td>Comparison</td>
<td>3.43 (.59)</td>
<td>3.59 (.46)</td>
<td></td>
</tr>
<tr>
<td>Body dissatisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>28.74 (7.81)</td>
<td>30.10 (8.0)</td>
<td>(p = .15)</td>
</tr>
<tr>
<td>Comparison</td>
<td>31.31 (7.81)</td>
<td>32.93 (7.17)</td>
<td></td>
</tr>
<tr>
<td>Restrained eating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>2.45 (.79)</td>
<td>2.19 (.79)</td>
<td>(p = .68)</td>
</tr>
<tr>
<td>Comparison</td>
<td>2.17 (.91)</td>
<td>2.09 (.97)</td>
<td></td>
</tr>
<tr>
<td>Perceptions of sociocultural pressure</td>
<td></td>
<td></td>
<td>(p = .44)</td>
</tr>
<tr>
<td>Intervention</td>
<td>10.16 (3.82)</td>
<td>10.48 (4.57)</td>
<td></td>
</tr>
<tr>
<td>Comparison</td>
<td>9.45 (4.30)</td>
<td>9.59 (4.53)</td>
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</table>

While the 4-week intervention produced changes in only the thin ideal internalization it was theorized that a longer intervention would have more effects on body dissatisfaction and restrained eating. Therefore more time was allotted for techniques found to be effective in reducing these eating disorder risk factors. It was decided to retain the *Ideal Body Stereotype Scale – Revised* along with the *Dutch Restrained Eating Scale* in the full intervention curriculum. The Satisfaction and Dissatisfaction with Body Parts scale was replaced with a more comprehensive survey in the full intervention curriculum and an additional survey was added to measure bulimic pathology in addition to weight and shape concerns. There were no difficulties with survey administration. Students did not ask questions about survey items and students did
not talk among themselves which may have indicated no confusion about measurement items. Overall completion time averaged 20 minutes as anticipated. The curriculum was well-received by the students. When asked what they liked most and least about the intervention, the following comments were reported:

“I think that this information is important for all college students to learn. It should almost be mandatory for freshman due to the pressures of college on new students.”

“I like the discussion we had the day when we turned in the extra credit assignment on eating disorders. It was very encouraging to see that I was not the only one struggling.”

“It made me look more at my life and some of my behaviors.”

“I mostly liked the topics concerning eating disorders as well as the topics concerning body image and the media because I found them close to home and very interesting.”

“The eating disorders [discussion] helped me to help a friend with binge eating.”

“I liked the discussions and it would make a great course.”

“I think I learned something new from all [the discussions] but the dieting lectures pointed out some problems I have, listed some probable causes and gave me some means to correct these problems.”

“The handout about contributing to an eating disorder will make me be more careful about what I say to people.”

“Media’s influence on body image . . . helped me to see how heavy an influence that today’s advertising has on our society. Really opened some eyes.”

“If I weren’t graduating, I would take your class in the fall.”

“There wasn’t any discussion that I didn’t like . . . I learned a lot from this course.”

“I wish that there would be more attention on how important and beneficial a course like this is.”

It was gleaned from the pilot that a longer intervention would have more positive effects on body dissatisfaction and restrained eating. Therefore more time was allotted for cognitive behavior techniques, cognitive dissonance activities and media literacy around the topics of basic nutrition, dieting and eating disorders. It was also determined that a more comprehensive survey should be used to measure body dissatisfaction, which is considered to be a key risk factor for
the development of eating disorders (Stice et al., 2001). And finally, it was determined that a longer intervention also warrants the identification of adaptive eating behaviors. As one student in the pilot asked, “Now I know what I am not supposed to do, but how am I supposed to eat?” Positive eating behaviors that include internal cues used to determine when, what and how much to eat are also important to address.

Based on the students’ responses regarding the need for the program, potential benefits, and a curriculum consistent with the departments’ focus, the Department of Nutrition, Food and Exercise Sciences created 2 sections of an expanded version of the pilot to further evaluate the efficacy of such an intervention on eating attitudes and behaviors. As such, 2 sections of PET 3932 were created for fall 2009 and were taught by the researcher. The course title was designated as “Eating disorders, Body image and Healthy weight management.” Advertisements included fliers that were e-mailed to various departments on campus including nutrition, exercise science, psychology, nursing, education, public health, department of athletics, and the university counseling center. There were no prerequisites required for this 3-credit hour course and the course was described as including discussions on cultural and societal emphasis on thinness, the role of the media on body image concerns, dieting and fads, eating disorders and healthy eating.

For purposes of comparison, four sections of HUN 1201 “the science of nutrition” was used as the control condition. Therefore, both sections of PET 3932 served as the intervention group and four sections of HUN 1201 served as the comparison group.

Prevention Program

Subjects. Intervention subjects included all female students registered for both sections of PET 3932: Eating Disorders, Body Image and Healthy Weight Maintenance in Fall 2009 who signed a consent agreeing to participate in the study. Comparison subjects included all female students registered for four sections of HUN 1201: Science of Nutrition who signed a consent form and agreed to participate in the study. The research protocol was approved by the Committee on the Use of Human Subjects in Research of the Florida State University. A small incentive gift card was provided to each intervention participant for participating in the research. Names were not included on the surveys but the pre and post-test surveys were matched by corresponding code numbers as students were asked to record the last four digits of their phone number on the survey.
Procedures. The intervention consisted first of a brief pre-test survey delivered the first day of classes during the fall 2009 semester. See Appendix I for the pre-test survey. A 12-week curriculum based on cognitive behavior therapy, cognitive dissonance and media literacy was then conducted. Post-test surveys were distributed following the curriculum and follow up surveys were then distributed and collected 4 weeks following the 12-week curriculum during finals week. See Appendix II for the pre-test, post-test and follow up survey. Surveys were distributed to the students enrolled in PET 3932 (intervention) prior to implementing the eating disorder curriculum. The same surveys were distributed to students enrolled in HUN 1201 during the same week. All students were informed that their input was requested regarding their eating attitudes and behaviors. The experimental group was informed that the course curriculum would consist of the following topics: nutrition, dieting, eating disorders, the role of the media in body image concerns and cultural and societal emphasis on thinness. Those in the comparison group were asked to complete a 20-30 minute survey now and at the end of the semester if they agreed to participate in the research study. Participants were also informed that the surveys would be anonymous and would in no way influence their grade.

Course Techniques. The instructional design for the curriculum was based on cognitive behavioral techniques and the instructor also used cognitive dissonance and media literacy strategies to promote behavior and attitude change. While there is evidence that cognitive behavior therapy, cognitive dissonance, and media literacy strategies are separately effective at promoting positive eating attitudes and behavior, a review of PubMed, PsychINFO, and ERIC databases revealed no study in which a curriculum based on a combination of these approaches has been evaluated for the effects on eating attitudes and behaviors.

Using techniques to develop class curriculum. Effective prevention programs based on cognitive behavior techniques have included activities such as self monitoring, challenging irrational beliefs, monitoring of negative self-talk and positive counter statements, strategies to cope with anxiety, distress, panic and relapse prevention strategies (Celio et al., 2000; Franko et al., 2005; Franko et al., 2008; Gollings et al., 2006; Low et al., 2006; Nicolino et al., 2001; Taylor et al., 2006; Winzelberg et al., 2000; Zabinski et al., 2001). Effective prevention programs based on cognitive dissonance techniques invite the participant to compare the inconsistency of their behaviors with their beliefs. These included activities such as listing reasons why adolescent girls should avoid thin-ideal thinking, defining the thin ideal and
discussing ways that it is perpetuated, listing costs associated with pursuing the thin ideal and participating in a role playing exercise where participants must dissuade the group facilitators from pursuing the thin ideal in a variety of different scenarios (i.e., a group leader pretends she is a teenage girl who is a severe dieter who never eats any fat). (Becker et al., 2005; Becker et al., 2006; Becker et al., 2008; Matusek et al., 2004; Mitchell et al., 2007; Roehrig et al., 2006; Stice et al., 2000; Stice et al., 2001).

Effective prevention programs based on media literacy techniques invite the participant to become a critical evaluator of the media. These include activities such as providing a history of the thinning standards of beauty in the media, viewing and discussing a video regarding the portrayal of women in advertisements, and discussions on the prevalence of techniques used by the media to create ideal images (Becker et al., 2005; Becker et al., 2006; Becker et al., 2008; Coughlin et al., 2006). All of the above-mentioned activities formed the basis of all classroom discussions and homework assignments. Table 2 includes a detailed description of learning objectives, reading assignments and in class activities based on cognitive behavior therapy, cognitive dissonance and media literacy.

<table>
<thead>
<tr>
<th>Week</th>
<th>Readings</th>
<th>Activities</th>
<th>Objectives</th>
<th>Technique</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tribole, Evelyn, and Elyse Resch. <em>Intuitive Eating : A Revolutionary Program that Works.</em> New York: St. Martin's Griffin, 2003. Pg 10-48</td>
<td>Homework: 24 hour food and exercise journal. Record your thoughts and feelings in relation to your food decisions. List your top 10 reasons to pursue a healthy lifestyle (use both positive and negative motivations)</td>
<td>Nutrition Objectives Students will be able to: 1. Identify functions of protein, carbohydrates and fats. 2. List consequences of low carbohydrate diet 3. Identify the Dietary Guidelines for Americans 4. Identify guidelines for physical activity</td>
<td>CBT</td>
<td>Restrained eating (<em>DRES</em>)</td>
</tr>
<tr>
<td>2</td>
<td>Tribole, Evelyn, and Elyse Resch. <em>Intuitive Eating : A Revolutionary Program that Works.</em> New York: St. Martin's Griffin, 2003. Pg 10-48</td>
<td>Using your food and exercise journal, record (at least) one healthy change you plan to make and develop a specific plan for change</td>
<td>Intuitive Eating Objectives Students will be able to: 1. Define intrinsic eating 2. Identify components of “normal eating” 3. Identify principles of healthy eating and adequate exercise 4. Differentiate between “mindful eating” and “dieting”</td>
<td>CBT</td>
<td>Intuitive eating (<em>IES</em>)</td>
</tr>
<tr>
<td>Week</td>
<td>Readings</td>
<td>Activities</td>
<td>Objectives</td>
<td>Technique</td>
<td>Measure</td>
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<tr>
<td>4</td>
<td>Stice, E., Davis, K., Miller, N.P. &amp; Marti, C.N. (2008) Fasting Increases Risk for Onset of Binge Eating and Bulimic Pathology: A 5-year Prospective Study. Journal of Abnormal Psychology, 117, 941-946.</td>
<td>Discuss handout “How do we contribute to an ED?” Small group discussions (raising children in a diet-obsessed culture)</td>
<td>Eating Disorders Students will be able to: 1. Identify criteria for anorexia nervosa, bulimia, binge eating disorders, Eating Disorders Not Otherwise Specified (EDNOS) and body dysmorphic disorder. 2. Identify risk factors for binge eating and bulimia (fasting, “cheating on weekends,” etc) 4. Identify what we say that may contribute to eating disorders</td>
<td>CBT</td>
<td>Restrained eating (DRES) Eating concerns (EDE-Q Eating concerns subscale)</td>
</tr>
<tr>
<td>5</td>
<td>Identify and challenge your own irrational beliefs about thinness. Identify negative self-talk and counter with pos. statements. Art/mindfulness activities (UCC)</td>
<td>Self Awareness Students will be able to: 1. Identify ways individuals undermine their own self-esteem. 2. Differentiate between positive and negative energy</td>
<td>CBT</td>
<td>Body dissatisfaction (BSQ) Shape and weight concerns (EDE-Q Shape and weight concerns subscales)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>(Handout – Body Project Stice &amp; Presnell, 2007). Assignment: examples of pressures to be thin and verbal challenges to those pressures. Reasons adolescent girls should avoid thin-ideal thinking.</td>
<td>Cultural and Societal Emphasis on Thinness Students will be able to: 1. List factors that contribute to the thin-ideal. 2. Define “thin-ideal internal.” 3. List costs or negative health effects that may occur as a result of thin-ideal internaliza. 4. Differentiate between “healthy” and “thin” ideal. 5. List consequences in attempting the thin ideal.</td>
<td>CD</td>
<td>Thin-ideal (IBSS-R)</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Readings</td>
<td>Activities</td>
<td>Objectives</td>
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<tr>
<td>7</td>
<td>List top 10 things individuals can do to resist thin ideal. Role-play scenarios</td>
<td>Cultural and Societal Emphasis on Thinness II (listed above)</td>
<td>CD</td>
<td>Thin-ideal (IBSS-R)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Grabe, S., Ward, L.M., &amp; Hyde, J.S. (2008). The Role of the Media in Body Image Concerns Among Women: A Meta-Analysis of Experimental and Correlational Studies. Psychological Bulletin, 134, 460-476,</td>
<td>Make a list of strategies that you could use to cope with anxiety, distress and panic. Mindfulness meditation Progressive muscle relaxation (UCC)</td>
<td>The Role of the Media 1. Define and differentiate between “experimental” and “correlational” research. 2. Identify that brief exposure to media images often leads to negative body image in women, (Grabe et al., 2008). 3. Identify that media use is related to increased eating disorder symptoms. 4. Identify techniques used by media to create ideal images</td>
<td>ML</td>
<td>Body dissatisfaction (BSQ) Shape and weight concerns (EDE-Q Shape and weight concerns subscale)</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Coping Strategies and Re-lapse Prevention Identify helpful coping strategies</td>
<td></td>
<td>CBT</td>
<td>Body dissatisfaction (BSQ) Shape, weight and eating concerns (EDE-Q Shape, weight and eating concerns subscales)</td>
</tr>
</tbody>
</table>

**Course Evaluation.** Quizzes and in-class activities, and homework assignments occurred weekly and formed the basis of course evaluation. Grades were determined by standard cut-off points of A = 90%, B = 80%, C = 70%, D = 60% and F = 50%.

**Measures.** Five instruments were used to evaluate thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating concerns, shape and weight concerns, eating pathology and intuitive eating. The *Ideal Body Stereotype Scale – Revised (IBSS-R)* which measures thin-ideal showed significance in the pilot study and was retained for this study. The
Dutch Restrained Eating Scale (DRES) designed to measure restrained eating and dieting, approached significance in the pilot and may have required a longer exposure to the techniques to show significance. The DRES is consistent with the focus of the intervention and was retained for the study. As this was a longer intervention, selecting a more comprehensive body dissatisfaction instrument was necessary and also helped to differentiate individuals at low and high risk for an eating disorder. The Body Shape Questionnaire (BSQ) (Cooper, Taylor, Cooper & Fairburn, 1987) used to measure body dissatisfaction, has high internal consistency ($\alpha = .97$), test-retest reliability (.88), and concurrent validity (.66) with other measures of body satisfaction (Rosen, Jones, Ramirez, & Waxman, 1996). Because body dissatisfaction is considered to be a key risk factor for the development of eating disorders (Stice et al., 2001) and because the BSQ has been used in other prevention studies to identify high risk participants (Becker et al., 2005; Becker et al., 2008; Celio et al., 2000; Zabinski et al., 2001), it was used in this study to identify low risk and high risk individuals at pre-test. An additional eating pathology instrument was essential to further identify dietary restraint, eating concerns, shape concerns, weight concerns and eating disorder (bulimic) pathology. The Eating Disorder Examination–Questionnaire (EDE-Q) (Fairburn & Beglin, 1994), a self-report version of the Eating Disorder Examination (EDE) (Fairburn & Cooper, 1993), offered a more comprehensive assessment of eating disorder pathology and was used in this study. The EDE-Q consists of 28 items and has reported good internal consistency (EDE-Q restraint $\alpha = .84$) (Becker et al., 2008; Roehrig et al., 2006), (EDE-Q weight & shape concerns $\alpha = .79-.80$) (Green, et al., 2005; Springer, et al., 1999), (EDE-Q eating concerns and (EDE-Q bulimic subscale $\alpha = .79-.85$) (Becker et al., 2008; Roehrig et al., 2006). The EDE-Q is composed of subscale scores that include Restraint, Eating Concern, Shape Concern and Weight Concern. Each subscale score is obtained by adding the subscale items together and dividing by the total number of items.

A longer intervention may have also warranted the identification of adaptive eating behaviors or those that contribute to and maintain overall psychological health (Seligman & Csikszentmihalyi, 2000; Tylka, 2006). These positive eating behaviors are more than just the absence of disordered eating, but also include internal cues used to determine when, what and how much to eat (Tylka, 2006). The Intuitive Eating Scale (IES) (Tylka, 2006), a 21-item self-report questionnaire that measures intrinsic (hunger-based) eating behaviors (Hawks et al., 2008) was also used in the study. This scale is composed of three subscales, the Unconditional
Permission to Eat subscale, Eating for Physical Rather than Emotional Reasons subscale and Reliance on Internal Hunger/Satiety Cues subscale. A total score is also calculated using the average of all summed (and reverse coded) responses. Initial testing of the IES among a college population yielded acceptable alpha coefficients (.42-.93) and adequate test-retest reliability for each subscale (.56-.87). Higher scores indicate positive agreement with intrinsic eating principles (Hawks et al., 2008).

Statistical Analyses. The first step in data analysis was to compare, through one way ANOVA’s, the means of the pre-test scores for the intervention and comparison participants in order to identify any differences between the groups. In order to answer all of the research questions, all of the dependent variables were used.

The main research question for this study was: What is the influence of an eating disorders, body image and healthy weight maintenance curriculum on the behaviors and attitudes of female college students? Four major themes were included in the analysis.

The first question addressed in the analysis of the data focused on the effect of participating in the academic course on intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, weight and shape concerns and eating pathology.

In order to address hypotheses 1.1-2.1 in the first theme (Theme A), mixed model repeated measures ANOVA was carried out with intervention and control participants for each of the dependent variables (DVs). “Condition” was the between subjects factor that included intervention and comparison. The dependent variables included thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating pathology and intuitive eating.

The second question in the analyses focused on the effect of the pre-test eating disorder risk on their change of intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating concerns, weight and shape concerns and eating pathology from pre-test to post-test. In order to address hypotheses 2 in the second theme (B), repeated measures ANOVA was carried out with the intervention and control participants for each of the dependent variables (DVs). “Condition” (intervention versus control) and “Risk level” (low versus high) were the two-level between-subjects factors and “Time” (pre-and post-) was the two-level within subjects factor. “Risk level” is made up of two levels that include low risk and high risk according to their scores on the BSQ. Body dissatisfaction is a key risk factor in the development of eating disorders (Stice, 2001) and has been used in previous research to
identify high risk participants (Becker et al. 2005; Becker et al., 2008; Zabinski, 2001). Low risk is considered under the median score and high risk is considered above the median score. The dependent variables include thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating concerns, weight and shape concerns and eating pathology.

The third question addressed whether intervention participants maintained changes in intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating, weight and shape concerns and eating pathology four weeks following the intervention. In order to address hypothesis 3 in the third theme (C), mixed model repeated measures ANOVA were carried out for each of the dependent variables. The independent variable “Risk level” (low versus high) was the two-level between-subjects factors and “Time” (pre-and follow up) was the two-level within subjects factor. Paired t-tests (two-tailed) were then conducted between pre- and follow up tests to determine significant within-group changes.

The fourth question in the analyses focused on the effect of their participation in the intervention on intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating, weight and shape concerns and eating pathology. Students self reported their total number of absences and missed assignments in the course on the follow up survey. In order to address hypotheses 4 in the fourth theme (D), mixed model repeated measures ANOVA’s were carried out for each of the dependent variables (DVs). The independent variable (IV), “absence range” (low versus high) was the two-level between-subjects factors and “time” (pre-and follow up) was the two-level within subjects factor. The “absence range” was made up of two levels that included minimal absences and excessive absences according to the number of absences reported (0-2 = minimal) (>2 = excessive). The dependent variables included intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, weight and shape concerns and eating pathology.

The fifth question addressed in the analyses focused on the effect of formal counseling for eating issues on intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, weight and shape concerns and eating pathology. Students self reported whether they had received formal counseling on the pre-test and follow up surveys. In order to address hypotheses 5.1-5.2 in the fifth theme (E), mixed model repeated measures ANOVA’s were also carried out for all participants on each of the dependent variables from pre-test to post-test. The independent variable (IV), “counseling” was the two-level between-subjects factors and
“time” (pre-and follow up) was the two-level within subjects factor. “Counseling” was made up of two levels that included “received counseling” or “did not receive counseling.” The dependent variables included intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, weight and shape concerns and eating pathology. Finally, effect sizes were measured for each dependent variable.

The sixth question addressed focused on the effect of each discussion and assignment on the thoughts and actions of intervention participants. Students self-reported on their belief that each discussion and assignment helped to change their behaviors and attitudes. Follow up paired t-tests were used to determine significant differences between attitudes and behaviors of both discussions and assignments.
CHAPTER 4

RESULTS

This chapter contains results from the statistical analyses used to interpret the data. The first section describes the process of how the results were collected, how missing data were handled and the internal consistency of each measure. Baseline data are described according to subjects’ age, weight, height, body mass index (BMI), ethnicity and major. The second section of this chapter answers each research question based on statistical findings. Dependent variables include intuitive eating as measured by the Intuitive Eating Scale, thin-ideal internalization as measured by the Ideal Body Stereotype Scale-Revised, restrained eating as measured by the Dutch Restrained Eating Scale and body dissatisfaction as measured by the Body Shape Questionnaire. Eating pathology was also examined using the Eating Disorder Examination Questionnaire subscales: Eating Concern, Weight Concern and Shape Concern. The bulimic diagnostic questions regarding binge eating and compensatory behaviors from the Eating Disorder Examination Questionnaire were also used to assess bulimic pathology.

Statistical Analysis Considerations

One-way ANOVA’s were used to identify any baseline differences between groups based on initial scores of outcome variables. One-way ANOVA’s were also used to examine whether the amount of absences affected changes from pre-test to post-test in intervention participants. Repeated measures ANOVA were used to test any differences between groups following the intervention. Repeated measures was also used to identify changes in intervention participants from pre-test to follow up and from post-test to follow up; to identify whether or not initial eating disorder risk had an effect on pre-test to post-test changes and if receiving professional counseling had an effect on changes from pre-test to post-test.

Initial surveys were distributed the first week of the fall 2009 semester to six classes in the Nutrition, Food and Exercise Science (NFES) Department. Both “Eating Disorder, Body Image and Healthy Weight Maintenance” (PET 3932) intervention classes received the survey in addition to four Science of Nutrition (HUN 1201) classes which acted as the control group. A post-survey was distributed in November following the intervention to all classes.
Males were excluded from the analyses as this research primarily focused on females due to their higher risk of eating disorders (Berger et al., 2008; Prouty et al., 2002; Schwitzer et al., 2001). A total of 259 female control participants completed pre-surveys during the first week of classes when attendance was mandatory. In November, when class attendance was much lower and post surveys were distributed, only 144 of the initial female control participants completed post-surveys. A total of 87 female intervention participants completed initial (pre-) surveys, with 11 of those students unavailable for the post- or follow up survey. Participants who only completed a pre-survey were removed from analysis. To eliminate attrition-bias, comparisons were made between those not completing post or follow up surveys (drop-outs) and those who did (non drop-outs) using one-way analysis of variance (ANOVA). Significant differences were not found between drop-outs and non-dropouts on any demographic or pre-intervention factors. Missing data among the remaining surveys included 9 female intervention participants who completed the pre- and 1-month follow up surveys, but no post-survey; 3 female intervention participants who completed the pre- and post-survey but no follow up survey; and items missing at random among several of the other surveys. Again, participants with missing data did not differ on any demographic or pre-intervention factors. Full information maximum likelihood (ML) estimation based on an expectation-maximization (EM) algorithm was used to impute missing data using the missing data module for PSAW (formerly SPSS). This approach is superior to other methods including case deletion, reweighting, averaging available items, and single imputation (Schafer & Graham, 2002). It is unbiased in large samples; it tends to have lower variance and is a better choice when data are missing at random (Schafer & Graham, 2002). Significant and non-significant effects remained consistent after imputation was utilized to handle missing cases. The final data set included 76 intervention participants used to analyze pre-, post- and follow up data and 144 control participants used to analyze pre- and post- data for a total sample size of 220 participants.

All measures demonstrated acceptable internal consistency. At pre-test, the Cronbach’s alphas of each scale were as follows: the Intuitive Eating Scale (IES) was .85; the Ideal Body Stereotype Scale Revised (IBSSR) was .82, the Dutch Restrained Eating Scale (DRES) was .92, and the Body Shape Questionnaire (BSQ) was .97. The Eating Disorder Examination–Questionnaire (EDE-Q) subscales were .88 for Eating Concerns, .91 for Shape Concerns and .87
for the Weight Concerns subscale. The binge eating composite of the EDE-Q was .82. The Eating Disorder Examination-Questionnaire (EDE-Q) global score was .94.

**Baseline Data**

Participants’ primary major of study included over thirty different majors with nearly 40% majoring in nutrition and exercise science, 15.9% and 22.7%, respectively. Roughly 30% of intervention participants and 8% of control participants majored in dietetics and 21% of intervention participants and 24% of control participants majored in exercise science. Intervention and control participants consisted of 41% in their first year of college, 25% in their second year, 18% in their third year and 16% in their fourth year. The mean age of participants was 20.86 years for the intervention group and 18.57 years for the control group which are both consistent with the age of onset of eating disorders in women (Woodside & Garfinkel, 1992). The average body mass index score was 22.34 which was in the normal range for adult women according to the Centers for Disease Control (CDC). Both groups were also similar in average BMI and ethnicity (Table 4).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Age</td>
<td>76</td>
<td>20.86 (3.74)</td>
</tr>
<tr>
<td>Weight (lb)</td>
<td>76</td>
<td>137.00 (24.24)</td>
</tr>
<tr>
<td>Height (in)</td>
<td>76</td>
<td>64.90 (2.53)</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>76</td>
<td>22.88 (3.91)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
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<td>Hispanic</td>
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<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

One-way ANOVA’s revealed no baseline difference between the intervention and control groups on all dependent variables. The Levene test was not significant; therefore the homogeneity of variance was not violated.
**Research question 1.** Are there significant post-treatment differences between intervention and control groups on thin-ideal internalization, restrained eating, body dissatisfaction, eating pathology (eating concerns, weight concerns and shape concerns) and intuitive eating?

**Operational hypothesis 1.** Female college students involved in the intervention will significantly increase intuitive eating and significantly decrease the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating concerns, shape and weight concerns and eating pathology from pre-test to post-test.

**Research Question 2.** Will intervention participants initially at higher risk have greater decreases in thin-ideal internalization, restrained eating, body dissatisfaction and eating pathology compared to intervention participants initially at lower risk and all control participants?

**Operational hypothesis 2:** Female students involved in PET 3932 with higher pre-test BSQ survey scores will have significantly greater increases in intuitive eating and greater reductions on the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology compared to female students involved in PET 3932 with lower pre-test BSQ scores and all female students involved in HUN 1201.

To answer research questions 1 and 2, mixed model repeated measures ANOVA were carried out for the intervention and control participants on each of the dependent variables (DV’s) to test whether intervention participants experienced significantly greater increases in intuitive eating and reductions in thin-ideal internalization, restrained eating, body dissatisfaction, eating pathology and eating, weight and shape concerns from pre-test to post-test compared to controls. The effect of the pre-test eating disorder risk on their change from pre-test to post-test was also examined. Eating disorder risk of participants was obtained by calculating those above and below a median split on the Body Shape Questionnaire (BSQ). The median BSQ score for intervention and control participants was 84. There were 107 participants ($M = 61.23$, $SD = 13.99$) who were below the median of 84 and they constituted the low risk group. There were 113 participants ($M = 115$, $SD = 28.05$) who were above the median of 84 and they constituted the high risk group on body dissatisfaction. Thus there were comparable high and low risk participants in both groups which is consistent with previous research (Becker et al., 2005; Becker et al., 2008).
Separate models were carried out for each dependent variable. “Condition” (intervention versus control) and “Risk level” (low versus high) were the two-level between-subjects factors and “Time” (pre-and post-) was the two-level within subjects factor. The hypothesized intervention effects would be supported in these models if there were significant condition x time interactions and the intervention group showed a greater decrease over time relative to the control group on each dependent variable. Paired t-tests (two-tailed) were conducted between pre- and post-tests to determine significant within-group changes.

Table 5 presents means, standard deviations and effect sizes for the intuitive eating comparison. Table 6 presents repeated measures ANOVA results for the Intuitive Eating comparison. Repeated measures ANOVA results yielded a significant time effect and a significant time x condition interaction effect for both the total Intuitive Eating Scale and the Unconditional Permission to Eat subscale (Table 6) with significant improvements and large effects occurring with the low and high risk intervention groups (Table 5). A small but significant effect also occurred for the control participants but a significant effect was not found for either the high or low risk control group. A significant linear time and a time x condition interaction effect also occurred with the Eating for Physical Rather than Emotional Reasons subscale (Table 6) in which high and low risk intervention females experienced significant improvements with medium effects (Table 5). Intervention participants experienced a significant improvement with a moderate effect size (Table 5) on Reliance of Internal Hunger/Satiety cues as indicated by a significant time x condition interaction effect (Table 6).

| Table 5. Means, Standard Deviations and Effect Sizes for Intuitive Eating |
|--------------------------|----------------|----------------|----------------|
| Measure                  | Pre- M (SD)    | Post- M (SD)   | Effect Size (d) |
|                          |               |               |                |
| Intuitive Eating Scale Total |
| Intervention             | 3.21 (.53)a   | 3.63 (.54)b   | 0.93**         |
| High Risk                | 2.92 (.49)a   | 3.43 (.53)b   | 1.06**         |
| Low Risk                 | 3.52 (.37)a   | 3.85 (.45)b   | 0.81**         |
| Control                  | 3.21 (.53)    | 3.24 (.54)    | 0.10           |
| High Risk                | 3.00 (.51)    | 3.04 (.47)    | 0.10           |
| Low Risk                 | 3.42 (.45)    | 3.46 (.52)    | 0.10           |
| Unconditional Permission To Eat Subscale |
| Intervention             | 2.92 (.78)a   | 3.67 (.70)b   | 1.11**         |
| High Risk                | 2.58 (.71)a   | 3.50 (.68)b   | 1.33**         |
| Low Risk                 | 3.31 (.67)a   | 3.86 (.68)b   | 0.92**         |
| Control                  | 2.93 (.84)a   | 3.06 (.87)b   | 0.21*          |
| High Risk                | 2.59 (.72)    | 2.70 (.74)    | 0.21           |
| Low Risk                 | 3.28 (.81)    | 3.44 (.84)    | 0.21           |
Table 5. (Continued)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-M (SD)</th>
<th>Post-M (SD)</th>
<th>Effect Size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eating For Physical Rather than Emotional Reasons Subscale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>3.22 (.95)a</td>
<td>3.64 (.81)b</td>
<td>0.46**</td>
</tr>
<tr>
<td>High Risk</td>
<td>2.88 (.97)a</td>
<td>3.35 (.86)b</td>
<td>0.47*</td>
</tr>
<tr>
<td>Low Risk</td>
<td>3.61 (.77)a</td>
<td>3.97 (.61)b</td>
<td>0.45*</td>
</tr>
<tr>
<td>Control</td>
<td>3.23 (.91)</td>
<td>3.17 (.86)</td>
<td>0.06</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.05 (.91)</td>
<td>3.04 (.82)</td>
<td>0.02</td>
</tr>
<tr>
<td>Low Risk</td>
<td>3.41 (.89)</td>
<td>3.31 (.89)</td>
<td>0.12</td>
</tr>
<tr>
<td><strong>Reliance on Internal Hunger/Satiety Cues Subscale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>3.78 (.65)a</td>
<td>3.97 (.63)b</td>
<td>.27*</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.67 (.66)</td>
<td>3.85 (.62)</td>
<td>.23</td>
</tr>
<tr>
<td>Low Risk</td>
<td>3.89 (.62)</td>
<td>4.11 (.62)</td>
<td>.31</td>
</tr>
<tr>
<td>Control</td>
<td>3.81 (.61)</td>
<td>3.78 (.57)</td>
<td>.03</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.71 (.72)</td>
<td>3.70 (.59)</td>
<td>.02</td>
</tr>
<tr>
<td>Low Risk</td>
<td>3.90 (.45)</td>
<td>3.86 (.54)</td>
<td>.06</td>
</tr>
</tbody>
</table>

Means with different subscripts were statistically significantly different from pre- to post-test.
*p<.05, ** p<.001. Intervention, n = 76; high risk, n = 40; low risk, n = 36. Control, n = 144; high risk = 73; low risk = 71.

Table 6. Results of Repeated Measures Analysis of Variance from Pre-test to Post-test for Intuitive Eating

<table>
<thead>
<tr>
<th>Analysis</th>
<th>F</th>
<th>P &lt;</th>
<th>Partial n²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intuitive Eating (IES) (df = 216)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>65.13</td>
<td>.000*</td>
<td>.23</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>45.72</td>
<td>.000*</td>
<td>.18</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>2.49</td>
<td>.12</td>
<td>.01</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>2.51</td>
<td>.12</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Unconditional Permission to Eat (IES subscale) (df = 216)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>92.70</td>
<td>.000*</td>
<td>.30</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>45.01</td>
<td>.000*</td>
<td>.17</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>3.20</td>
<td>.08</td>
<td>.02</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>5.24</td>
<td>.02*</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Eating for Physical Rather than Emotional Reasons (IES subscale) (df = 216)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>8.31</td>
<td>.00*</td>
<td>.04</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>14.39</td>
<td>.00*</td>
<td>.06</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>.62</td>
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<td>.00</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>.02</td>
<td>.90</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Reliance on Internal Hunger/Satiety Cues (IES subscale) (df = 216)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>3.33</td>
<td>.07</td>
<td>.02</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>5.87</td>
<td>.02*</td>
<td>.03</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>.01</td>
<td>.92</td>
<td>.00</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>.16</td>
<td>.69</td>
<td>.00</td>
</tr>
</tbody>
</table>

Asterisks indicate significant effect with significance level at p < .05.

Table 7 presents means and standard deviations for the Ideal Body Stereotype Scale-Revised (IBSS-R), Dutch Restrained Eating Scale (DRES) and the Body Shape Questionnaire
Table 8 presents repeated measure ANOVA results for these same dependent variables. ANOVA results revealed a linear time and time x condition interaction for the thin-ideal (IBSS-R) (Table 8) where high risk intervention participants improved with a medium effect size and low risk intervention participants improved with a small effect size (Table 7). Restrained eating (DRES) also yielded a significant linear time effect, a significant time x condition interaction effect and a significant time x risk interaction effect (Table 8) where both high and low risk intervention participants experienced a significant reduction in restrained eating with a large effect size (Table 7). The ANOVA for the BSQ yielded a linear time, time x condition, time x risk and time x condition x risk effects where high risk intervention participants experienced significant reductions in body dissatisfaction with a large effect size.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-M (SD)</th>
<th>Post-M (SD)</th>
<th>Effect Size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal Body Stereotype Scale –Revised (IBSSR)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention High Risk</td>
<td>3.58 (.50)a</td>
<td>3.36 (.58)b</td>
<td>.47**</td>
</tr>
<tr>
<td>Intervention Low Risk</td>
<td>3.71 (.45)a</td>
<td>3.46 (.42)b</td>
<td>.59**</td>
</tr>
<tr>
<td>Control High Risk</td>
<td>3.44 (.51)a</td>
<td>3.25 (.70)b</td>
<td>.38*</td>
</tr>
<tr>
<td>Control Low Risk</td>
<td>3.53 (.64)</td>
<td>3.55 (.62)</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Dutch Restrained Eating Scale (DRES)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention High Risk</td>
<td>2.76 (.83)a</td>
<td>2.19 (.74)b</td>
<td>.82**</td>
</tr>
<tr>
<td>Intervention Low Risk</td>
<td>3.10 (.67)a</td>
<td>2.36 (.80)b</td>
<td>.96**</td>
</tr>
<tr>
<td>Control High Risk</td>
<td>2.39 (.83)a</td>
<td>2.00 (.62)b</td>
<td>.70**</td>
</tr>
<tr>
<td>Control Low Risk</td>
<td>2.69 (.90)</td>
<td>2.69 (.89)</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Body Shape Questionnaire (BSQ)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention High Risk</td>
<td>91.36 (35.37)a</td>
<td>76.01 (25.87)b</td>
<td>.60**</td>
</tr>
<tr>
<td>Intervention Low Risk</td>
<td>115.70 (29.00)a</td>
<td>89.23 (26.22)b</td>
<td>.90**</td>
</tr>
<tr>
<td>Control High Risk</td>
<td>64.31 (12.82)</td>
<td>61.33 (15.70)</td>
<td>.23</td>
</tr>
<tr>
<td>Control Low Risk</td>
<td>87.53 (35.32)</td>
<td>87.68 (35.57)</td>
<td>.00</td>
</tr>
</tbody>
</table>

Means with different subscripts were statistically significantly different from pre- to post-test. 
*p<.05, ** p<.001. Intervention, n = 76; high risk, n = 40; low risk, n = 36. Control, n = 144; high risk = 73; low risk = 71.
Table 8. Results of Repeated Measures Analysis of Variance from Pre-test to Post-test for IBSS-R, DRES and BSQ

<table>
<thead>
<tr>
<th>Analysis</th>
<th>F</th>
<th>P &lt;</th>
<th>Partial n²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin-ideal internalization (IBSSR) (df = 216)</td>
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<td></td>
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</tr>
<tr>
<td>Time</td>
<td>8.34</td>
<td>.00*</td>
<td>.04</td>
</tr>
<tr>
<td>Time x Condition</td>
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<td>.05</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>.30</td>
<td>.59</td>
<td>.00</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>1.75</td>
<td>.19</td>
<td>.00</td>
</tr>
<tr>
<td>Restrained eating (DRES) (df = 216)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>34.18</td>
<td>.000*</td>
<td>.14</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>35.28</td>
<td>.000*</td>
<td>.14</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>9.38</td>
<td>.002*</td>
<td>.04</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>.51</td>
<td>.48</td>
<td>.00</td>
</tr>
<tr>
<td>Body dissatisfaction (BSQ) (df = 216)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>25.62</td>
<td>.000*</td>
<td>.11</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>27.15</td>
<td>.000*</td>
<td>.11</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>29.60</td>
<td>.000*</td>
<td>.12</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>7.60</td>
<td>.006*</td>
<td>.03</td>
</tr>
</tbody>
</table>

Asterisks indicate significant effect with significance level at p < .05.

Table 9 presents the means and standards deviations for the EDE-Q global scale and EDE-Q subscales. Table 10 presents repeated measures ANOVA results for the EDE-Q global and EDE-Q subscales. The Eating, Shape and Weight concerns subscales of the EDE-Q all yielded significant time, time x condition, time x risk and time x condition x risk effects (Table 10). All three of these subscales demonstrated significant improvements with large effects for the intervention participants. When examining level of risk for the Eating and Shape concerns subscales, a moderate effect was found for low risk intervention participants and a small effect was found for high risk control participants.

Table 9. Means, Standard Deviations and Effect Sizes for the EDE-Q Subscales

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-M (SD)</th>
<th>Post-M (SD)</th>
<th>Effect Size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDEQ-Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>1.96 (.13)a</td>
<td>1.14 (.93)b</td>
<td>.88**</td>
</tr>
<tr>
<td>High Risk</td>
<td>2.78 (1.17)a</td>
<td>1.55 (1.97)b</td>
<td>1.23**</td>
</tr>
<tr>
<td>Low Risk</td>
<td>1.05 (.69)a</td>
<td>.68 (.43)b</td>
<td>.61**</td>
</tr>
<tr>
<td>Control</td>
<td>1.75 (1.37)a</td>
<td>1.53 (1.31)b</td>
<td>.25**</td>
</tr>
<tr>
<td>High Risk</td>
<td>2.64 (1.27)a</td>
<td>2.27 (1.33)b</td>
<td>.35**</td>
</tr>
<tr>
<td>Low Risk</td>
<td>.84 (.70)</td>
<td>.77 (.73)</td>
<td>.10</td>
</tr>
</tbody>
</table>
Table 9. (Continued)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre- M (SD)</th>
<th>Post- M (SD)</th>
<th>Effect Size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EDEQ-Eating Concerns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>1.15 (.136)a</td>
<td>.57 (.181)b</td>
<td>.54**</td>
</tr>
<tr>
<td>High Risk</td>
<td>1.81 (.151)a</td>
<td>.86 (.199)b</td>
<td>.73**</td>
</tr>
<tr>
<td>Low Risk</td>
<td>.41 (.123)a</td>
<td>.23 (.133)b</td>
<td>.34*</td>
</tr>
<tr>
<td>Control</td>
<td>1.00 (.123)a</td>
<td>.84 (.110)b</td>
<td>.19*</td>
</tr>
<tr>
<td>High Risk</td>
<td>1.64 (.138)a</td>
<td>1.34 (.126)b</td>
<td>.27*</td>
</tr>
<tr>
<td>Low Risk</td>
<td>.35 (.51)</td>
<td>.31 (.50)</td>
<td>.08</td>
</tr>
<tr>
<td><strong>EDEQ-Shape Concerns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>2.54 (.344)a</td>
<td>1.74 (.152)b</td>
<td>.70**</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.48 (.126)a</td>
<td>2.29 (.145)b</td>
<td>.95**</td>
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<td>Low Risk</td>
<td>1.49 (.75)a</td>
<td>1.12 (.69)b</td>
<td>.43*</td>
</tr>
<tr>
<td>Control</td>
<td>2.26 (.150)a</td>
<td>2.07 (.157)b</td>
<td>.17*</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.28 (.127)a</td>
<td>2.98 (.157)b</td>
<td>.23*</td>
</tr>
<tr>
<td>Low Risk</td>
<td>1.20 (.82)</td>
<td>1.11 (.93)</td>
<td>.10</td>
</tr>
<tr>
<td><strong>EDEQ-Weight Concerns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>2.15 (.53)a</td>
<td>1.45 (.122)b</td>
<td>.64**</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.17 (.133)a</td>
<td>1.96 (.137)b</td>
<td>1.01**</td>
</tr>
<tr>
<td>Low Risk</td>
<td>1.03 (.72)</td>
<td>.89 (.69)</td>
<td>.22</td>
</tr>
<tr>
<td>Control</td>
<td>1.97 (.156)</td>
<td>1.83 (.157)</td>
<td>.13</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.01 (.138)</td>
<td>2.72 (.153)</td>
<td>.22</td>
</tr>
<tr>
<td>Low Risk</td>
<td>.91 (.88)</td>
<td>.91 (.96)</td>
<td>.00</td>
</tr>
</tbody>
</table>

Means with different subscripts were statistically significantly different from pre- to post-test. *p<.05, ** p<.001. Intervention, n = 76; high risk, n = 40; low risk, n = 36. Control, n = 144; high risk = 73; low risk = 71.

Table 10. Results of Repeated Measures Analysis of Variance from Pre-test to Post-test for EDE-Q Subscales

<table>
<thead>
<tr>
<th>Analysis</th>
<th>F</th>
<th>P &lt;</th>
<th>Partial n²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eating pathology (EDEQ Global) (df = 216)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>67.57</td>
<td>.000*</td>
<td>.24</td>
</tr>
<tr>
<td>Time x Condition</td>
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<td>.09</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>22.06</td>
<td>.000*</td>
<td>.09</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>4.76</td>
<td>.03*</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Eating Concerns (EDEQ subscale) (df = 216)</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>31.47</td>
<td>.000*</td>
<td>.13</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>9.24</td>
<td>.003*</td>
<td>.04</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>15.55</td>
<td>.000*</td>
<td>.07</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>3.92</td>
<td>.049*</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Shape Concerns (EDEQ subscale) (df = 216)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>39.29</td>
<td>.000*</td>
<td>.15</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>15.08</td>
<td>.000*</td>
<td>.07</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>10.61</td>
<td>.001*</td>
<td>.02</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>3.94</td>
<td>.049*</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Weight Concerns (EDEQ subscale) (df = 216)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>30.40</td>
<td>.000*</td>
<td>.12</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>13.11</td>
<td>.000*</td>
<td>.06</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>20.91</td>
<td>.000*</td>
<td>.09</td>
</tr>
<tr>
<td>Time x Condition x Risk Status</td>
<td>7.08</td>
<td>.008*</td>
<td>.03</td>
</tr>
</tbody>
</table>

Asterisks indicate significant effect with significance level at p < .05.
Research Question 3. Will intervention participants maintain effects over 4 weeks (to one month follow up)?

Operational hypothesis 3. Female college students involved in PET 3932 will maintain effects from pre-test to follow up on the following measures: intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, shape and weight concerns and eating pathology. To answer research question 3, mixed model repeated measures ANOVA were carried out for the intervention participants on each of the dependent variables (DV’s) to test whether the effects were maintained over time with the intervention participants by level of risk from pre-test to follow up on intuitive eating, thin-ideal internalization, restrained eating, body dissatisfaction, eating, weight and shape concerns and eating pathology. Table’s 11 and 12 present means and standard deviations and ANOVA results for pre-test, post-test and follow up data. A significant linear time effect was found for the total Intuitive Eating scale with large improvements for both low and high risk intervention participants. The Unconditional Permission to Eat subscale also yielded a significant linear time effect with a large effect for high risk intervention participants and a medium effect for low risk participants. The Eating for Physical Rather than Emotional Eating subscale yielded a significant linear time effect with a small but significant effect for high risk participants and a medium effect for low risk participants. The Reliance on Internal Hunger Cues yielded a significant time x risk interaction effect with a significant improvement for low risk participants with a medium effect.

No significant effects were found with thin-ideal internalization. Restrained eating yielded a significant time effect with large and significant improvements for high and low risk participants. Body dissatisfaction, eating concerns and shape concerns all yielded significant time and time x risk interactions with significant and large effects for high risk intervention participants. Eating pathology yielded significant time and time x risk interactions with significant and large effects for high risk intervention participants and significant and moderate effects for low risk intervention participants. Weight concerns also yielded a significant time effect with significant improvements in high risk participants with a large effect.
Table 11. Means and Standard Deviations of Dependent Variables for Pre-test, Post-test and Follow up of Intervention Participants

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
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<tr>
<td></td>
<td></td>
<td>P</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Intuitive Eating (IES)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td></td>
<td>3.21 (.53)</td>
<td>3.63 (.54)</td>
<td>3.61 (.64)</td>
</tr>
<tr>
<td>High risk</td>
<td></td>
<td>2.92 (.49)</td>
<td>3.43 (.53)</td>
<td>3.33 (.63)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>3.52 (.37)</td>
<td>3.85 (.45)</td>
<td>3.92 (.50)</td>
</tr>
<tr>
<td>Unconditional Permission to Eat</td>
<td></td>
<td>2.92 (.78)</td>
<td>3.67 (.70)</td>
<td>3.51 (.81)</td>
</tr>
<tr>
<td>High risk</td>
<td></td>
<td>2.58 (.71)</td>
<td>3.50 (.68)</td>
<td>3.33 (.80)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>3.31 (.67)</td>
<td>3.86 (.68)</td>
<td>3.72 (.78)</td>
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<tr>
<td>Eating for Physical (not emotional) Reasons</td>
<td></td>
<td>3.22 (.95)</td>
<td>3.64 (.81)</td>
<td>3.55 (.96)</td>
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<tr>
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<td></td>
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<td>3.35 (.86)</td>
<td>3.15 (.10)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>3.61 (.77)</td>
<td>3.97 (.61)</td>
<td>4.00 (.68)</td>
</tr>
<tr>
<td>Reliance on Internal Hunger Cues</td>
<td></td>
<td>3.78 (.65)</td>
<td>3.97 (.63)</td>
<td>4.00 (.71)</td>
</tr>
<tr>
<td>Intervention</td>
<td></td>
<td>2.92 (.97)</td>
<td>3.85 (.62)</td>
<td>3.75 (.71)</td>
</tr>
<tr>
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<td></td>
<td>3.31 (.67)</td>
<td>4.11 (.62)</td>
<td>4.28 (.62)</td>
</tr>
<tr>
<td>Thin-ideal internalization (IBSSR)</td>
<td></td>
<td>3.58 (.50)</td>
<td>3.36 (.58)</td>
<td>3.43 (.65)</td>
</tr>
<tr>
<td>Intervention</td>
<td></td>
<td>3.71 (.45)</td>
<td>3.46 (.42)</td>
<td>3.53 (.62)</td>
</tr>
<tr>
<td>High risk</td>
<td></td>
<td>3.44 (.51)</td>
<td>3.25 (.70)</td>
<td>3.33 (.67)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>3.27 (.83)</td>
<td>2.19 (.74)</td>
<td>2.09 (.73)</td>
</tr>
<tr>
<td>Restrained eating (DRES)</td>
<td></td>
<td>2.76 (.83)</td>
<td>2.36 (.80)</td>
<td>2.31 (.77)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>2.39 (.84)</td>
<td>2.00 (.62)</td>
<td>1.86 (.60)</td>
</tr>
<tr>
<td>Body dissatisfaction (BSQ)</td>
<td></td>
<td>91.36 (35.37)</td>
<td>76.01 (25.87)</td>
<td>75.43 (27.32)</td>
</tr>
<tr>
<td>Intervention</td>
<td></td>
<td>115.70 (29.0)</td>
<td>89.23 (26.22)</td>
<td>89.55 (27.13)</td>
</tr>
<tr>
<td>High risk</td>
<td></td>
<td>64.31 (12.82)</td>
<td>61.33 (15.70)</td>
<td>59.75 (17.28)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>2.76 (1.30)</td>
<td>1.14 (.94)</td>
<td>1.21 (.96)</td>
</tr>
<tr>
<td>Eating Pathology (EDEQ Global)</td>
<td></td>
<td>2.77 (1.17)</td>
<td>1.55 (1.07)</td>
<td>1.60 (1.03)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>1.05 (.69)</td>
<td>.68 (.43)</td>
<td>.77 (.64)</td>
</tr>
<tr>
<td>Eating concerns (EDEQ subscale)</td>
<td></td>
<td>1.15 (1.36)</td>
<td>.57 (.81)</td>
<td>.68 (.91)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>1.81 (1.51)</td>
<td>.86 (.99)</td>
<td>.99 (1.11)</td>
</tr>
<tr>
<td>Shape concerns (EDEQ subscale)</td>
<td></td>
<td>.41 (.59)</td>
<td>.23 (.33)</td>
<td>.33 (.39)</td>
</tr>
<tr>
<td>Weight concerns (EDEQ subscale)</td>
<td></td>
<td>2.54 (1.45)</td>
<td>1.74 (1.29)</td>
<td>1.75 (1.23)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>3.48 (1.26)</td>
<td>2.29 (1.45)</td>
<td>2.26 (1.26)</td>
</tr>
<tr>
<td>Low risk</td>
<td></td>
<td>1.49 (.75)</td>
<td>1.12 (.69)</td>
<td>1.19 (.92)</td>
</tr>
</tbody>
</table>
| Means with different subscripts were statistically significantly different from pre- to post-test. *p<.05, ** p<.005

Intervention, n = 76; high risk, n = 40; low risk, n = 36. IES - Intuitive Eating Scale, followed by IES subscales; IBSSR - Ideal Body Stereotype Scale Revised; DRES - Dutch Restrained Eating Scale; BSQ - Body Shape Questionnaire; EDEQ - Eating Disorder Examination Questionnaire
### Table 12. Results of Repeated Measures Analysis of Variance from Pre-test to Follow up of Intervention Participants

<table>
<thead>
<tr>
<th>Analysis</th>
<th>F</th>
<th>P</th>
<th>Partial n²</th>
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</thead>
<tbody>
<tr>
<td>Intuitive Eating (IES)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>44.98</td>
<td>.000*</td>
<td>.38</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>.00</td>
<td>.97</td>
<td>.00</td>
</tr>
<tr>
<td>Unconditional Permission to Eat (IES subscale)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>41.21</td>
<td>.000*</td>
<td>.36</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>1.39</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td>Eating for Physical Rather than Emotional Reasons (IES subscale)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>8.09</td>
<td>.00*</td>
<td>.10</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>.00</td>
<td>.96</td>
<td>.00</td>
</tr>
<tr>
<td>Reliance on Internal Hunger/Satiety Cues (IES subscale)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>2.85</td>
<td>.10</td>
<td>.04</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>4.51</td>
<td>.04*</td>
<td>.06</td>
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<tr>
<td>Thin-ideal internalization (IBSS-R)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>3.48</td>
<td>.07</td>
<td>.05</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>.24</td>
<td>.62</td>
<td>.00</td>
</tr>
<tr>
<td>Restrained eating (DRES)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>61.15</td>
<td>.000*</td>
<td>.45</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>2.43</td>
<td>.12</td>
<td>.03</td>
</tr>
<tr>
<td>Body dissatisfaction (BSQ)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>26.16</td>
<td>.000*</td>
<td>.26</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>12.92</td>
<td>.001*</td>
<td>.15</td>
</tr>
<tr>
<td>Eating pathology (EDEQ global)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>44.48</td>
<td>.000*</td>
<td>.38</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>16.89</td>
<td>.000*</td>
<td>.19</td>
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<tr>
<td>Eating concerns (EDEQ subscale)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>15.53</td>
<td>.000*</td>
<td>.17</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>10.21</td>
<td>.001*</td>
<td>.12</td>
</tr>
<tr>
<td>Shape concerns (EDEQ subscale)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>30.92</td>
<td>.000*</td>
<td>.30</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>11.08</td>
<td>.001*</td>
<td>.13</td>
</tr>
<tr>
<td>Weight concerns (EDEQ subscale)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>20.17</td>
<td>.000*</td>
<td>.21</td>
</tr>
<tr>
<td>Time x Risk</td>
<td>17.77</td>
<td>.000</td>
<td>.19</td>
</tr>
</tbody>
</table>

Asterisks indicate significant effect with significance level at p < .05.

IES = Intuitive Eating Survey; IBSSR – Ideal Body Stereotype Scale Revised; DRES = Dutch Restrained Eating Scale; BSQ = Body Shape Questionnaire; EDEQ = Eating Disorder Examination Questionnaire (n = 64)

**Research Question 4.** Will students in the intervention group with a low number of absences (2 or less) have greater increases in intuitive eating and greater decreases in thin-ideal internalization, dietary restraint, body dissatisfaction and eating pathology than students with a higher number of absences (greater than 2)?

**Operational hypothesis 4.** Female college students involved in PET 3932 with a low number of absences (2 or less) will have significantly greater increases in intuitive eating and significantly
greater reductions on the following measures: thin-ideal internalization, restrained eating, body dissatisfaction, dietary restraint, eating concerns, shape and weight concerns and eating pathology.

In order to determine if number of absences had any effect on the results, only those students who answered the question regarding absences were analyzed. While attendance was taken by the researcher at every class session it was not possible to match the attendance with the numeric identification code used on all questionnaires for the purpose of assuring the respondents anonymity. Self reporting of absences was required so that anonymity could be maintained and students wouldn’t be identified on their responses. Roughly 30% (n = 18) of the students did not miss a single class, twenty-one percent (n=12) missed one class, (n=19) 30% missed 2 classes, 19% (n=12) missed 3 classes and 1 student reported missing 5 classes. Therefore, the majority of these students (99%) missed 0-3 classes throughout the entire semester. Mixed model repeated measures ANOVA’s revealed no significant differences on any of the dependent variables at follow up for intervention students who missed 0-2 or 3 or more classes. The repeated measures ANOVA interaction effect between time x absence range was not significant for intuitive eating, F (1, 61) = .12, p > .05; thin-ideal internalization, F (1, 61) = .85, p > .05, restrained eating, F (1, 61) = .10, p > .05, body dissatisfaction, F (1, 61) = 2.20, p > .05 or eating pathology, F (1, 61) = 2.24, p > .05.

**Research Question 5.** Are there significant post-treatment differences in intuitive eating, thin-ideal internalization, dietary restraint, body dissatisfaction, eating, shape and weight concerns and eating pathology with intervention and control participants who received professional counseling compared to intervention participants who did not receive counseling?

Mixed model repeated measures ANOVA’s were also carried out for all participants to examine the effects of formal counseling on each of the dependent variables from pre-test to post-test. Only eleven (5%) of the intervention and control participants reported receiving formal counseling. Mixed model repeated measures ANOVA interaction effect between time x receiving counseling was not significant for intuitive eating, F (1, 214) = 1.19, p > .05; thin-ideal internalization, F (1, 215) = 1.74, p > .05, restrained eating, F (1, 215) = 2.21, p > .05, body dissatisfaction, F (1, 215) = 2.28, p > .05 or eating pathology, F (1, 214) = 1.31, p > .05.
Subjective Feedback

Intervention students were asked to complete a course evaluation at the end of the semester to garner their feedback on the effect that the academic course had on their thoughts and actions. Students were asked to rate each lesson (for a total of 16 lessons) on a scale of 1 to 5 (strongly disagree to strongly agree) on how they felt it impacted their own attitudes and behaviors. Additionally, the students were asked to provide “what they liked most about the class,” “what they liked least about the class,” and any additional comments. One hundred students (n=100) completed the evaluation, however nine (n=9) were incomplete, thus analyses were conducted on the remaining ninety-one evaluations (n=91). Specifically, students were asked to rate each discussion and corresponding assignment separately on their interest in that subject area. They were also asked to rate their belief that the discussion and assignment helped to change their attitudes and behaviors. Table 13 presents the means for each lesson for each question and the results of follow up paired t-tests used to determine significant differences between attitudes and behaviors of both discussions and assignments.

Table 13. Means of Topics and Assignments According to Students’ Perceptions

<table>
<thead>
<tr>
<th>Topics and Assignments</th>
<th>Interest</th>
<th>Discussion</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Helped with attitudes</td>
<td>Helped with behaviors</td>
</tr>
<tr>
<td>Nutrition &amp; Exercise: Dietary Guidelines</td>
<td>4.33</td>
<td>4.04a</td>
<td>3.91b</td>
</tr>
<tr>
<td>Assign: Pursuing healthy lifestyle, journal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intuitive Eating</td>
<td>4.59</td>
<td>4.45</td>
<td>4.41</td>
</tr>
<tr>
<td>Assign: Quiz on reading</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dieting: Short and long term effects</td>
<td>4.29</td>
<td>4.09a</td>
<td>3.96b</td>
</tr>
<tr>
<td>Assign: Effective Obesity Treatments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dieting: Non-diet vs diet thinking</td>
<td>4.37</td>
<td>4.09a</td>
<td>3.96b</td>
</tr>
<tr>
<td>Assign: Traditional and non-diet approaches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Disorders: Diagnostic criteria, risk</td>
<td>4.40</td>
<td>3.95a</td>
<td>3.78b</td>
</tr>
<tr>
<td>Assign: “Fasting” article (Stice et al, 2008)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Disorders: Case studies</td>
<td>4.09</td>
<td>3.79</td>
<td>3.69</td>
</tr>
<tr>
<td>Assign: Case study that most resonates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Disorders: How we contribute</td>
<td>4.33</td>
<td>4.07a</td>
<td>3.90b</td>
</tr>
<tr>
<td>Assign: What we say or hear</td>
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<td></td>
<td></td>
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<tr>
<td>Eating Disorders: Raising children</td>
<td>4.48</td>
<td>4.21a</td>
<td>4.02b</td>
</tr>
<tr>
<td>Assignment: Read articles about children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self Awareness: Counseling Center</td>
<td>3.56</td>
<td>3.40</td>
<td>3.38</td>
</tr>
<tr>
<td>Assignment: In class self awareness activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Emphasis on Thinness: Thin-ideal</td>
<td>4.54</td>
<td>4.32</td>
<td>4.25</td>
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</table>
Table 13. (Continued)

<table>
<thead>
<tr>
<th>Societal Emphasis on Thin: Personal examp.</th>
<th>4.54</th>
<th>4.18</th>
<th>4.12</th>
<th>4.13</th>
<th>4.10</th>
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</thead>
<tbody>
<tr>
<td>Assign: Discuss examples from your life</td>
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<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Cultur Emphasis: Women’s bodies over time</th>
<th>4.40</th>
<th>4.19a</th>
<th>4.01b</th>
<th>4.02</th>
<th>3.96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment: Role play activity</td>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Role of Media in Body Image Concerns</th>
<th>4.57</th>
<th>4.27</th>
<th>4.24</th>
<th>4.14</th>
<th>4.10</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Role of Media: Techniques used by media</th>
<th>4.63</th>
<th>4.44</th>
<th>4.36</th>
<th>4.38</th>
<th>4.35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment: Bring media piece to class</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Role of Media: Jean Kilbourne’s film</th>
<th>4.63</th>
<th>4.45a</th>
<th>4.31b</th>
<th>4.35</th>
<th>4.27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign: Reaction paper on media</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Coping Strategies and Relapse Prevention | 3.84 | 3.58 | 3.60 | 3.66 | 3.60 |
| Assign: Counseling Center activities in class | | | | | |

Reported Means (n=91) 1= Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Means with different subscripts were statistically significantly different for attitudes and behaviors, p<.05.

Table 13 indicates that the majority of classes were perceived favorably. In most but not all cases, attitudes were consistent with behaviors. The majority of students reported interest in all of the topics but some topics were perceived as more interesting than others. For example, more than 90% of the students found “The Role of the Media in Body Image Concerns” to be interesting and maintained that interest through three discussions. These lessons also received the highest mean average on the 5-point scale. Another example of the differences among the students’ perceptions regarding discussions and assignments can be seen in the example of “Dieting.” The discussion on dieting appeared to have a greater impact on behaviors (4.09a versus 3.96b). The first day, the media was introduced as a source of the thin-ideal and the link between media exposure and negative body image and eating disorder symptoms were covered. Students were quizzed in class on these readings. The second day, each student was asked to identify a media piece (magazine, U-tube clip, etc) that depicts the thin-ideal and share with the class. The third day, students viewed Jean Kilbournes’, Killing Us Softly film and wrote a 1-page reaction paper.

In addition, 90% of the students reported interest in the three discussions depicting “Cultural and Societal Emphasis on Thinness.” The first discussion addressed factors that contribute to the thin-ideal, and costs or negative effects that occur as a result of thin-ideal internalization, they were then quizzed on the readings that supported this theory. In the second discussion, students shared examples from their lives concerning pressures to be thin and what people can do or say to resist the thin ideal. The third discussion addressed society’s view of
women’s bodies throughout history. The assignment consisted of a role-play activity where students must convince each other to give up their quest for the “thin-ideal.”

Similarly, “raising children in a diet-obsessed culture” was also perceived as interesting to over 90% of the class where students were asked to read and write a reaction to one of four reading assignments. These readings addressed the effect that a mothers’ view of her own body has on her daughters’ body satisfaction; parents paying for their young son to have gastric bypass surgery; kids’ fears about bad foods; and the effect that a parents’ comment on their child’s body and weight has on the child’s self esteem and eating disorder risk. Discussions were lively while addressing this topic and students freely shared very personable experiences of their own childhood.

An impressive 98% of the students reported an interest in the intuitive eating discussion. The book by the same name (Intuitive Eating by Tribole & Resch, 2003) begins with helping the reader identify what kind of eater they are through the various eating personalities (careful eater, professional dieter, unconscious eater, etc.) The book then covers the 10 basic principles of intuitive eating, 1) rejecting the dieting mentality, 2) honoring your hunger, 3) making peace with food, 4) challenging the food police, 5) feeling your fullness, 6) discovering the satisfaction factor, 7) coping with emotions without using food, 8) respecting your body, 9) including regular physical activity and 10) honoring your health. Their assignment consisted of an in class quiz on several chapters of the book. Students were lead through a mindful eating activity involving a Hershey’s kiss where they were asked to savor the chocolate while being fully aware of the taste, smell and texture of it. It appeared to be a relatively new concept and students were intrigued with the notion of mindful eating and being able to eat what you want, when you want with moderate restraint.

While the majority of the topics and assignments were perceived very favorably by the students, two topic areas presented by the counseling center produced the weakest evaluations. Counseling center representatives conducted an in class Self Awareness activity that required students to identify positive qualities first about themselves and second from others, and record these on the flower-shaped handout provided. Some of the informal comments received regarding this assignment reflected not only a low regard for the personal value of the activity, but the academic value as well. It appeared to be too elementary. The counseling center representatives presented a session on “Coping Strategies and Relapse Prevention.” Students
were asked to identify their own coping mechanisms and were then sent to corners of the room where signs were posted designating these various strategies (exercise, shopping, listening to music, etc). They were then asked if they’d like to share any other coping strategies that they use while under stress. While the content was relevant to the goals of the study, many students felt that the presentation was disorganized and needing more structure.

Overall, students’ interest level in fourteen of the sixteen lessons was > 4.0, signifying an interest in the topic. As mentioned previously, the two lessons that were conducted by the University Counseling Center, “Self Awareness” and “Coping Strategies and Relapse Prevention” were not received as favorably as the others (3.56 and 3.84, respectively).

At the end of the semester long course, students were asked what they liked most, what they liked least and any additional comments that they would like to make regarding their perception of the course. These comments can be found in Appendix B.

**Results Summary**

According to the preliminary analyses, no baseline differences existed between the control and intervention groups, indicating that participants in the control group were comparable to participants in the intervention group. The results of the analyses indicate that the prevention program was effective in reducing risk factors associated with eating disorders among both high and low risk participants. The greatest improvements and corresponding effects sizes at follow up occurred with the high risk intervention participants reporting less guilt and rigidity when eating, decreased restrained eating, and lower body dissatisfaction, specifically reduced shape and weight concerns. Moderate effects were identified in low risk intervention participants with less guilt and rigidity when eating, less mindless and emotional eating, more reliance on internal hunger cues, less restrained eating and decreased eating pathology. Improvements in thin ideal waned over time for both low and high risk intervention participants.
CHAPTER 5

DISCUSSION

The use of combined approaches from several successful college eating disorder prevention programs make this intervention unique and may account for the positive results produced as well as the magnitude of the positive changes seen. Previous interventions found reductions in body dissatisfaction, dieting and eating disorder symptoms as well as improvements in thin-ideal internalization (Stice et al., 2002; Stice & Ragan, 2006). In addition, in a study by Stice, Shaw, Burton & Wade, 2006, adolescent girls involved in a 3-session cognitive dissonance group experienced reductions in thin-ideal internalization, body dissatisfaction, dieting behaviors, negative affect and eating pathology and girls involved in a 3-session healthy eating group also experienced these reductions. Both of these studies utilized a psychoanalytic approach with small to medium effect sizes. Results were similar to the current study however this study produced larger effect sizes. The current study drew heavily from nutritional science and intuitive eating concepts and combined both cognitive dissonance and healthy eating approaches into a semester-long course for college students. This course included cognitive dissonance techniques of arguing against the thin-ideal, with cognitive behavioral techniques such as goal setting and developing detailed plans for healthy eating in order to maximize the effects of both approaches. The combination of strategies used in this study may be partly responsible for the larger effect sizes found.

As noted above, the effect sizes for intervention participants (high and low risk) were notable with regard to the intuitive and restrained eating results, both of which were positive. In addition, high risk intervention participants showed reductions in body dissatisfaction, shape concerns and weight concerns. These effect sizes were large to very large, which may be partly attributable to the length of the prevention program and the combination of cognitive behavioral therapy, cognitive dissonance, and media literacy approach.

Intuitive Eating

As hypothesized, the greatest improvements in intuitive eating occurred in high and low risk intervention participants. Both groups reported less guilt and rigidity when eating and more
flexibility and control which was maintained at 1-month follow up. The same groups also reported a reduction in mindless and emotional eating compared to the control groups with a moderate to large effect at follow up. Low risk intervention participants experienced the most improvement in identifying hunger cues with a large effect size. High risk intervention participants improved in all aspects of intuitive eating except identifying hunger and fullness cues. This suggests that the educational curriculum was effective; however, more intensive treatment with a nutritionist may be necessary for improvements with high risk individuals struggling to identify satiety cues.

In contrast, Hawks et al (2008), in an exploratory study, did not find improvements with overall intuitive eating in a high dieting group which was determined by the Cognitive Behavioral Dieting Survey (Martz, Sturgis and Gustafson, 1996). High scores on this survey correlate with elevated levels of dietary restraint, which indicates that an individual is at high risk for the development of an eating disorder. Similar to the current study, these students participated in an academic course intended to decrease dietary restraint, negative eating styles and body image concerns and included reading assignments related to body image, self-esteem, eating disorders, dieting, and obesity. Their discussions and journal assignments also focused on the fashion industry, diet advertisements, and weight-loss fads. Students in the low dieting group (low risk) reported the greatest increase in intuitive eating compared to students in the high dieting group. Hunger based (intuitive) eating increased in all participants but emotional eating did not improve in the high dieting group. Unlike the current intervention which was most appropriate for high risk individuals, the researchers point out that their academic course may be more successful with individuals whose negative eating behaviors are not as fully entrenched.

Extensive discussions on eating mindfully, physical and psychological effects of dieting, food phobia in the media, raising children as natural intuitive eaters and related learning opportunities possibly contributed to the successes noted in this intervention. In addition, the usefulness of including self talk, mood and feelings along with a hunger scale in personal food journals contributed to decreased mindless and emotional eating as well as increased confidence in identifying hunger and fullness cues. Discussions included in this intervention may have assisted high risk participants in feeling a greater sense of confidence and reduced their guilt and rigid eating styles. The ability to recognize hunger and fullness cues, which was greatly
improved in the low risk individuals, may not only reduce their risk of developing an eating disorder, but could also reduce risk of weight related conditions.

Many students struggled with negative body image and eating pathology issues as evidenced by the large number of high risk participants identified in the study; however, an even greater set of students could benefit from intuitive eating principles. As one student remarked in the pilot of this intervention, “Now I know what we are not supposed to do but how are we supposed to eat?” Intuitive eating emphasizes awareness of hunger and fullness cues and avoiding strict rules and eating plans that dictate what and when to eat. According to discussions and testimonies in the course, students were relieved to hear that strict eating regimens are not a requirement of good health maintenance. Students appreciated the approach of learning to eat when hungry and to stop when full. They responded to these simple and natural concepts, which often conflict with messages they hear in the media promoting food phobias and overemphasizing the power of food. Besides the small exploratory study mentioned above (Hawks et al., 2008), previous eating disorder prevention programs did not include an intuitive eating approach providing individuals with a healthy alternative. The addition of the intuitive eating component to the intervention proved to be beneficial and is recommended for future interventions designed to reduce the risk for the development of eating disorders.

**Thin-ideal Internalization**

Thin-ideal internalization is considered a risk factor for eating disorders (Stice et al., 2001). It is related to body dissatisfaction as women feel pressure to attain these ideals which result in a greater discontent with their own bodies. This leads to restrained eating and other pathogenic eating behaviors and may compel women to lose weight and change their bodies through harmful methods (Stice et al., 2006). Thin-ideal internalization improvements were noted from pre to post-test and these improvements coincided with improvements in body dissatisfaction and restrained eating. However, thin ideal internalization waned from post-test to follow up, but a similar effect was not seen for body dissatisfaction or restrained eating as previously noted by Killen et al. (1996) and Stice et al. (2001). In fact, the large effect sizes for the decreases in body dissatisfaction and restrained eating were noted at both post-test and follow up in high risk intervention participants. It is quite possible that over time increases in thin-ideal may be associated with increased body dissatisfaction and restrained eating. It is also possible
that the IBSS-R instrument lacked sensitivity and specificity therefore it may not have accurately identified individuals with an increased thin-ideal or those with a low thin-ideal. Alternatively, although participants in this study may have agreed that in general, thin women are attractive, it may not have had a resultant effect on their own body dissatisfaction.

This intervention emphasized learning opportunities that required the student to be introspective, and to apply healthy body image concepts to themselves as opposed to placing undo emphasis on external ideals. For example, through their reaction papers, they were asked to discriminate between what others think (external ideals) and what is reasonable for oneself. Many students reiterated in the class discussions that they had not only begun to routinely incorporate this thought-provoking technique, but they had also suggested these behavior changes to others. Perhaps these stimulating activities helped improve the participant’s body satisfaction and avoid making unrealistic comparisons and as a result decreased negative behaviors such as dietary restraint.

Mixed results for thin-ideal, body dissatisfaction and eating pathology were also found in an eating disorder intervention with sorority members involved in either a cognitive dissonance or media literacy intervention (Becker et al., 2006). At the 7-week follow up of this two 2-hour intervention, changes in thin-ideal were not evident in the media literacy group, yet decreased scores for body dissatisfaction and eating pathology occurred albeit with a small effect size. Results for the cognitive dissonance groups were somewhat more consistent as thin-ideal internalization scores improved with a medium effect and coincided with improvements in dietary restraint, eating pathology and body dissatisfaction 7 weeks after the intervention. In a later study, large effects were seen with body dissatisfaction at 8-month follow up in high risk females for both the media literacy and cognitive dissonance groups, yet thin ideal effect sizes were small in these same groups (Becker et al., 2008). Both of these studies used the IBSS-R to measure thin-ideal which may not have accurately measured their awareness of societal attitudes of thinness and personal acceptance of these societal beliefs.

Perhaps the IBSS-R was not the best measure to identify individuals with a thin-ideal as the instrument does not mention a desire to attain an unhealthy level of thinness (Chernyak & Lowe, 2010). The IBSS-R simply measures the agreement that various body types are attractive (eg., “thin women are more attractive” or “slender women are more attractive”). Another instrument that has been used to measure thin-ideal includes the Sociocultural Attitudes Towards
Appearance Questionnaire (SATAQ) (Heinberg, Thompson & Stormer, 1995). This 14-item questionnaire includes an Awareness subscale which measures recognition of the societal influence on attitudes toward appearance, and an Internalization subscale, measuring acceptance or endorsement of those societal standards. First year college females were exposed to 2 one-hour computer-based eating disorder prevention sessions 1-2 weeks apart (Franko et al., 2005). This program, “Food, Mood and Attitude” used cognitive-behavioral constructs to address cognitive distortions, self-esteem, coping skills and harm reduction. In efforts to decrease internalization of the thin-ideal participants were exposed to media images and ideal body types of women in the past 50 years to reiterate that society’s idea of beauty constantly changes over time. Participants were asked to be aware of unhealthy body messages in fashion magazines and avoid comparing other women’s bodies to their own. Thin-ideal internalization, measured by the SATAQ significantly decreased for the intervention participants as did shape and weight concerns at 3-month follow up. As a result, decreased internalization coincided with body dissatisfaction even at the 3 month follow up unlike the current study.

Of late, one idea that has been suggested is that a desire to obtain a thinner body may not necessarily be pathological as women strive to maintain health and avoid weight gain (Chernyak & Lowe, 2010). Conversely, thin-ideal may not be as easily manipulated compared to other risk factors (Stice et al., 2001). Perhaps thin-ideal internalization is more embedded in one’s psyche whereas interventions may have more influence on other risk factors such as body dissatisfaction and dietary restraint.

**Restrained Eating**

As expected, both high and low risk intervention participants experienced a decrease in restrained eating at post-test and follow up with a large effect. High risk participants reported the greatest reduction in restrained eating. Follow up scores for these participants were even lower (ie. improved) than the pre-test scores of the low risk participants. These reductions could have far reaching effects with the prevention of eating disorders in the intervention participants. Restrained eating in order to achieve a low body weight may be an important component in the development of bulimia nervosa and therefore a decrease in restrained eating may be particularly beneficial for those at risk for developing this eating disorder (Chernyak & Lowe, 2010).
Dietary restraint is measured through a variety of surveys, but those interventions that used the Dutch Restrained Eating Scale (DRES) also resulted in decreased scores at 2-8 month follow up but with small to medium effects (Becker et al., 2005; Becker et al., 2006; Becker et al., 2008; Gollings et al., 2006; Stice & Ragan 2002; Stice et al., 2006). The approaches used in these interventions included media literacy, cognitive dissonance or basic psychoeducation. There is some evidence that media literacy techniques alone may not be effective in maintaining reductions in dietary restraint 8 months after the intervention (Becker et al., 2006). Specific activities and sessions varied in these interventions but each one included “harmful dieting” and “socio-cultural pressures to pursue the thin-ideal” discussions.

The current intervention addressed the above-mentioned topics but resulted in decreased restrained eating with a large effect. This may be due in part to the expanded discussions on the negative effects of dieting that included topics on children’s health and benefits of the non-diet approach. “The effects that a diet-obsessed culture has on children’s health” and “Comparison of the mindful (non-diet approach) with the traditional (diet) approach” were specific topics discussed at length in class. Participants comments about these particular topics included, “I learned a lot,” “it made me think,” “eye opening,” and “it was great to know how dieting affects your body, not just losing pounds.” Participants were asked to discuss the effectiveness of the traditional approach which focuses on weight loss as the goal compared to the effectiveness of the non-diet approach that focuses on enhancing health and self confidence as the goal. Students disputed the concept that healthy weight is only defined by standardized tables and argued that one is able to maintain a natural weight without dieting. Students discussed the theory that natural body weight occurs in response to bodily cues and physical activity. They also discussed eating in response to internal hunger and satiety cues versus suppressing hunger in order to follow a strict meal plan. Discussions focused on food as not “bad,” “illegal,” or “forbidden,” which often makes food more desirable, but that one often begins to desire healthier food when they have nonjudgmental access to all foods. These concepts were similar to the intuitive eating concepts which were proven to be beneficial and the combination of these two approaches may have strengthened the curriculum and ultimately led to the large decrease in restrained eating.

Additionally, this intervention included a food journal assignment that helped the students to identify restrictive and harmful behaviors, thoughts and feelings. After completing the journal students were given a written assignment that required them to rate their overall
eating, describe what dietary changes they would like to make, and if they noticed that mood, self talk or feelings contributed to their food choices. Finally, they were asked to record at least one desired dietary change and provide a specific plan for that change. After the writing assignments were submitted, students briefly discussed their goals for change in class. This assignment was requested early in the semester, therefore students were reminded later to refer to their journals and goals and revise if needed after several of the intuitive eating and dieting discussions had occurred in the course.

In summary, the activities in the class (eg., student discussions, the use of journaling) encouraged critical thinking among the participants as they identified negative consequences related to dieting. These assignments required the students to critically analyze these harmful behaviors and may have contributed to the large effect sizes. Activities that include cognitive–behavioral constructs and cognitive restructuring require students to examine less harmful behaviors and beliefs. In order to decrease restrained eating, self monitoring activities, challenging irrational beliefs, and monitoring of negative self-talk are fundamental exercises that resonate with students and should be included in future interventions.

**Body dissatisfaction**

As predicted, high risk intervention participants experienced reductions in body dissatisfaction with a large effect that was maintained at follow up. This result may be attributable to the heavy emphasis placed on sociocultural influences on the development of body dissatisfaction in the current intervention.

Few college eating disorder prevention programs have resulted in decreased body dissatisfaction with a large effect size. One such study conducted by Becker et al., 2008 resulted in reductions in body dissatisfaction with a large effect size at the 8-month follow up. In this study one group received a cognitive dissonance approach and the other, media literacy to address the thin-ideal. In the cognitive dissonance group, participants listed the costs of pursuing the thin ideal, discussed the unattainability of the thin-ideal and completed role plays persuading others to avoid pursuit of the thin-ideal. The media literacy group addressed the influence of media in perpetuating the thin ideal, discussed strategies for resisting pro–thin-ideal media messages and identified costs associated with pursuit of the thin ideal. Prior interventions by these researchers with this population were not as successful as small to moderate effects in body
dissatisfaction were reported at 1-month and 8-month follow up (Becker et al., 2005; Becker et al., 2006). Another study employed cognitive behavioral therapy to address social pressures to be thin (Gollings & Paxton, 2006). “Set Your Body Free” was an 8-week cognitive behavioral group therapy pilot intervention that resulted in decreased body dissatisfaction (and binge eating) for high risk females with a large effect at 2-month follow up (Gollings and Paxton, 2006). Participants examined the relationship between body image and self-esteem, the importance of thinness to self-evaluation and interpersonal relationships, understanding and managing social pressures to be thin, the role of body comparisons and techniques to counteract these ways of thinking. The internet and face-to-face version of this small intervention (n = 39) experienced comparable results, however the absence of a control group weakens this study as improvements may have resulted from non-intervention effects. Finally, a third study used both cognitive behavior and cognitive dissonance techniques to address dysfunctional thoughts related to body dissatisfaction (O’Brien & Lebow, 2007). This intervention with an even smaller sample (n = 28), consisted of an 8-week psychoeducational program that resulted in decreased body dissatisfaction at 6-month follow up with a large effect. Participants were encouraged to challenge their dysfunctional cognitions associated with negative feelings about their body. Although this study included a control group, an adequate sample size is needed to fully evaluate the intervention. This intervention used primarily cognitive behavioral techniques but employed a cognitive dissonance technique when addressing body image and the effects of the media. All of these programs differed in techniques but all included discussions on the importance of thinness or the effects of the media on body image, as did the current intervention.

The current intervention employed a combination of several of the above mentioned methods to address body dissatisfaction but with a particular emphasis on sociocultural influences. Cognitive dissonance was used to address cultural and societal emphasis on thinness as participants were asked to provide examples of pressures to be thin and verbal challenges to those pressures. Students also listed reasons why adolescent girls should avoid thin-ideal thinking and engaged in role-play scenarios. Media literacy techniques were used to address the role of the media in body image concerns as students critiqued the media after viewing Jean Kilbournes’ “Killing Us Softly III” video. The history of thinning standards of beauty in the media was also discussed at length. Cognitive behavioral techniques were also used in the
current study as participants were asked to identify and challenge irrational beliefs about thinness, identify negative self-talk and counter with positive statements.

Not all of the interventions which emphasized sociocultural influences on negative body image resulted in decreased body dissatisfaction. Nicolino and colleagues (2001) used cognitive behavioral techniques in a small group format to address dysfunctional body image thoughts, feelings, and behaviors. Compared to the other studies that resulted in decreased body dissatisfaction, this study was much shorter in duration, as it only included a single 2-hour cognitive behavior therapy session. This duration may have been inadequate to create lasting body satisfaction improvements.

Two research design differences set the current intervention apart from the previous studies mentioned above. The venue for the previous programs included group therapy or semi-mandatory group programs for new sorority members which ranged in size from 3-21 participants. Over 50 participants at a time received the current intervention in an academic setting, enabling the ability to reach a large population of high risk female college students. Second, the lack of a control group was identified in two of the studies (Becker et al., 2008; Gollings & Paxton, 2006) and less than 12 participants completing the third intervention (O’Brien & LeBow, 2007). A no-treatment control group strengthens a study as improvements observed may be the result of regression to the mean or other non-intervention effects. In addition, small sample sizes may contribute to a lack of adequate statistical power.

It is apparent from the above discussion that cognitive dissonance, cognitive behavior techniques and media literacy can all be used to improve body satisfaction if content specific discussions addressing the sociocultural effects on body dissatisfaction are also included. In addition, effective interventions must include more than one or two sessions, and ideally address body dissatisfaction through a comprehensive 8-12 week intervention, include a control group, and have adequate sample sizes. Moreover, discussions that encourage the critical review of sociocultural and media influences and their impact on body image and the thin-ideal are vital components in reducing body dissatisfaction among high risk participants and should be included in future interventions.
Eating Disorder Behavior and Attitudes

As hypothesized, both high and low risk intervention participants experienced a decrease in eating disorder pathology as measured by the EDE-Q global score at post-test and follow up. High risk participants reported the greatest reduction in eating disorder attitudes and behaviors with a large effect and maintained these reductions at follow up. Low risk participants also maintained changes at follow up with a medium effect size. The EDE-Q is correlated with the behavioral and attitudinal characteristics of bulimia nervosa and it accurately assesses change in eating disorder symptoms over time (Sysko, Walsh & Fairburn, 2005). The Restraint, Weight and Shape Concerns, and Eating Concerns subscales provide a comprehensive assessment of eating disorder pathology and these combined scores make up the EDEQ global score. Because the global score was significant, further tests were conducted on the Weight Concerns, Shape Concerns and Eating Concerns subscales.

Eating, Shape and Weight Concerns. As predicted, high risk intervention participants experienced large reductions in shape and weight concerns and a medium effect in eating concerns that were maintained at follow up. Although strongly correlated with body dissatisfaction as measured by the BSQ (Winzelberg et al., 2000), weight concern is a slightly broader construct as individuals could report that weight and shape constitute a primary determinant of self-worth, but report no body dissatisfaction (Stice, Ng & Shaw, 2010). Previous studies have linked excessive weight concerns with subclinical and clinical eating disorders (e.g., Killen et al., 1996), therefore it is presumed that a reduction in weight/shape concerns and improvement in body image may reduce the onset of eating disorders (Winzelberg et al., 2000).

In addition to improvements in the high risk intervention participants, reductions in shape and eating concerns were also noted in low risk intervention participants but these effects were not maintained at follow up although their scores remained low. High risk participants from the control group also experienced reductions in shape and eating concerns although with small effect sizes. With regard to this latter group, perhaps the control curriculum, HUN 1201, (the science of nutrition) had a positive effect on high risk students. Although this academic course incorporates more of a nutrition science curriculum that does not include techniques such as cognitive dissonance, cognitive behavior and media literacy, students are exposed to the basic principles of nutrition, and how best to meet nutritional needs for optimal health.
Two interventions reported improvements in eating, shape and weight concerns and used similar techniques as the current intervention. “Food, Mood and Attitude” a computer based eating disorder prevention program used a comparable cognitive-behavioral approach and a focus on improving body image, cultural determinants of beauty and the role of the media in body image. Students were engaged in recognizing and managing cognitive distortions and the development of positive coping skills. Decreased shape and weight concerns along with thin-ideal internalization were reported at the 3 month follow up with moderate effect size (Franko et al., 2005). “Student Bodies,” a similarly structured 8-week on-line eating disorder prevention program (Manwaring et al., 2008; Taylor et al., 2006; Zabinski et al., 2001) also reported a decrease in eating and weight concerns at the at the 10-week follow up but with a small effect size (Zabinski et al., 2001). Two additional applications of this program resulted in decreased weight concerns with small to moderate effect sizes at the 1 year follow up (Taylor et al., 2006; Manwaring et al., 2008).

While CD-Rom applications and other computer based interventions can be quite convenient to use and provide a measure of anonymity perhaps the lack of face to face interaction decreased the effectiveness of this medium. The effect sizes produced in the current intervention suggest that the face to face interaction among individuals may be more efficacious as it requires more focused attention and accountability. Individuals can’t hide their emotion when talking with each other which may reveal shared concerns and create a more cohesive group.

Summary

Based on the findings of this study six factors have been identified as important components to include in future interventions designed to reduce the risk of eating disorders. First, programs should incorporate an intuitive eating component as students will benefit from these basic principles. Second, an instrument that identifies individuals with a thin-ideal should be used. Specifically, the instrument should mention a desire to attain an unhealthy level of thinness as this is a risk factor for bulimia nervosa (Chernyak & Lowe, 2010). Thin-ideal may need to be considered as a more permanent construct and more embedded in one’s psyche as compared to other risk factors such as body image and dietary restraint that may be more variable. Third, the problem of dietary restraint can be addressed effectively through critical thinking activities, self monitoring and opportunities to challenge irrational beliefs. Fourth, the
strength of society’s emphasis on unrealistic body image combined with similar media influences may require more intense efforts through numerous discussions addressing the sociocultural and media effects on body dissatisfaction and the thin-ideal. Participants need multiple opportunities to critically analyze media effects and explore any irrational beliefs about thinness. Fifth, in this age of technology it is tempting to employ computer based interventions. However, face-to-face communication may be more conducive to idea sharing, providing enhanced opportunity to interact, and allowing for more camaraderie among individuals. And finally, studies must test for and report effect sizes more often. Emphasizing the size of the difference between interventions, and how well they work, effect sizes allow for more rigorous evaluation of the efficacy of interventions.

Limitations and Future Research

In this section, five limitations of this research design are briefly considered. The first limitation of this research is the lack of random assignment to the intervention and control groups. Because students self-selected into each course, the randomized design was not possible. However, all of the reviewed college courses did not have randomized designs in an effort to attract those students at highest risk (Hawks et al., 2008; Sepulveda et al., 2007; Springer & Winzelberg, 1999; Stice & Ragan, 2002; Stice et al., 2006). Second, as with any research design where participants are knowingly participating in a study, the Hawthorne effect is possible. Participants may improve their behavior in response to the fact that they are being studied (Landsberger, 1958). Students were not instructed that changes in their attitudes and behaviors were expected as a result of participating in the academic course. However it may have been deduced as students were asked to complete a survey prior to the intervention and following the curriculum.

Third, a follow up survey was not collected from control participants as access was denied during final exam week. Perhaps as a result of exposure from the Science of Nutrition curriculum, high risk control participants improved on shape and eating concerns. Whether or not these changes would be maintained over time is unknown.

Fourth, participants were asked which discussions and assignments they felt had the most impact in changing their attitudes and behaviors. This subjective evaluation overwhelmingly suggested that the majority of activities were deemed effective. As these data were collected at
the end of the program, future studies might consider multiple assessments at different points in time and provide opportunities to identify specifically what behaviors were changed in an effort to glean the effectiveness of specific activities.

And finally, it is important that harmful or high risk behaviors and attitudes are decreased among college females, but it is even more critical that the risk reduction is maintained. As noted in this research, although it was a short follow up, intervention students did not revert to their initial behaviors and attitudes and changes were maintained at 1 month. Future research should examine whether these effects persist over time through regular follow up surveys. Longitudinal studies have identified risk factors among adolescent girls over time for eating disorders (Neumark-Sztainer, Wall, Story & Sherwood et al., 2009; Stice et al., 2009) but follow up extending for more than 6 months after the intervention has not been examined in college academic prevention programs. Booster sessions may also be needed to ensure that effects are maintained.

**Implications**

Results suggest that an academic curriculum using cognitive behavioral techniques, media literacy and cognitive dissonance can be effective in decreasing eating disorder behaviors and attitudes in both low risk and high risk females. This type of intervention can be easily incorporated into a college nutrition department and can serve as an effective prevention tool for women at low and high risk of developing eating disorders without inducing iatrogenic effects. Programs of this nature can also include protective factors, such as intuitive or intrinsic eating (Hawks et al., 2008) which can equip students with skills necessary for a more well-balanced approach to eating. Due to the awareness of how widespread the problem of disordered eating may be on a college campus it was not surprising that the course was so well-received. The evaluations of the participants and the findings suggest that an academic course of this nature should be considered a standard part of any nutrition program curriculum.
APPENDIX A

HUMAN SUBJECTS APPROVALS AND INFORMED CONSENTS
Office of the Vice President For Research  
Human Subjects Committee  
Tallahassee, Florida 32306-2742  
(850) 644-8673 A· FAX (850) 644-4392  

APPROVAL MEMORANDUM  

Date: 1/12/2009  
To: Amy Magnuson [amagnuson@admin.fsu.edu]  
Address: 2140  
Dept.: THARGARD  

From: Thomas L. Jacobson, Chair  
Re: Use of Human Subjects in Research  
Eating Disorders, Body Image and Obesity 4-week Curriculum Pilot Study  

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR Â§ 46.110(7) and has been approved by an expedited review process.  

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

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

If the project has not been completed by 1/11/2010 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.  

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

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

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

Cc: Doris Abood, Advisor [dabood@fsu.edu]
HSC No. 2008.2100
November 20, 2008

Dear Student,

If you are 18 years old or older, then you are invited to participate in a research study. The purpose of this study is to evaluate the effect of a 4-week Body Image, Eating Disorder and Obesity curriculum on nutrition knowledge, eating attitudes & behaviors of college students.

Participation in the study only requires you to complete a brief (5-10 min) survey in January and again in February. You may or may not be exposed to a 4-week curriculum consisting of the following topics: nutrition, dieting, eating disorders, the role of the media in body image concerns and cultural & societal emphasis on thinness. The information you provide will be confidential to the extent allowed by law. Your name and any other identifying information WILL NOT be collected. The aggregate survey data only will be entered into a statistical analysis program for data analysis. Hard copy data will be destroyed after 1 year. The researcher is the only individual who will have access to the information you provide.

Your participation in this study is voluntary – you are free to refuse to take part. There are little to no risks of participating in this study and the benefits may include: increased knowledge of nutrition related topics, more positive attitudes regarding body image, & dietary intake, and healthier lifestyle behaviors. There is a small possibility of discomfort associated with responding to questions about body image, eating, etc. Additional resources are available to you on FSU’s campus if needed including: the University Counseling Center (644-2003), Thagard Student Health Center (644-4567), and the Nutrition Clinic at Thagard Student Health Center (644-8871). Signing this consent form will indicate your agreement to participate. Whether or not you choose to participate will have no bearing on your grade in this class.

Please contact Amy Magnuson at 644-8871 if you have any questions regarding this study. You may also contact Dr. Doris Abdoor in the Nutrition Department at 644-4796. Additionally, any questions regarding your treatment or rights as a participant in this research project please contact:

Institutional Review Board (Human Subjects Committee)
2035 E. Paul Drive, Box 19
100 Stiger Building, Innovation Park
Tallahassee, FL 32310
644-8856 (Hotline Information)

I agree to participate in this study.

Signature ____________________________________ Date ____________

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

APPROVAL MEMORANDUM

Date: 7/17/2009

To: Amy Magnuson [amagnuson@admin.fsu.edu]

Address: 2140
Dept.: THAGARD

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
The Impact of an Eating Disorders, Body Image and Healthy Weight Maintenance curriculum on the behaviors and attitudes of college students

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 07/08/2009. Your project was approved by the Committee.

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

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

If the project has not been completed by 7/7/2010 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

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

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

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

Cc: Doris Abood, Advisor [dabood@fsu.edu]
HSC No. 2009.2931
July 6, 2009

Dear Student,

If you are 18 years old or older, then you are invited to participate in a research study. The purpose of this study is to evaluate the effect of a 12-week Eating Disorder, Body Image and Healthy Weight Maintenance curriculum on eating attitudes & behaviors of college students. This curriculum is the actual course, PET 3932.

Participation in the study only requires you to complete a brief (15-20 min) survey in August and again in December. You may or may not be exposed to a curriculum consisting of the following topics: nutrition, dieting, eating disorders, the role of the media in body image concerns and cultural & societal emphasis on thinness. The information you provide will be confidential to the extent allowed by law. Your name and any other identifying information WILL NOT be collected. You will be asked to use the last 4 digits of your phone number on both the pre and post surveys in order to match the surveys. The aggregate survey data only will be entered into a statistical analysis program for data analysis. Hard copy data will be destroyed after 2 years. The researcher is the only individual who will have access to the information you provide.

Your participation in this study is voluntary – you are free to refuse to take part and there is no penalty for non-participation. You can withdraw from the research at any time and this will NOT affect your grade in the course. There are little to no risks of participating in this study and the benefits may include: increased knowledge of nutrition related topics, more positive attitudes regarding body image & dietary intake, and healthier lifestyle behaviors. There is a small possibility of discomfort associated with responding to questions about body image, eating, etc. Additional resources are available to you on FSU's campus if needed including: the University Counseling Center (644-2003), Thagard Student Health Center (644-4567), and the Nutrition Clinic at Thagard Student Health Center (644-8871). Signing this consent form will indicate your agreement to participate. Whether or not you choose to participate will have no bearing on your grade in this class.

Please contact Amy Magnuson at 644-8871 if you have any questions regarding this study. You may also contact Dr. Doris Abood in the Nutrition Department at 644-4796. Additionally, any questions regarding your treatment or rights as a participant in this research project please contact:

Institutional Review Board (Human Subjects Committee)
2035 E. Paul Dirac Drive, Box 15
100 Sliger Building, Innovation Park
Tallahassee, FL 32310
644-8836 (Hotline Information)

I agree to participate in this study.

__________________________________________
Signature

__________________________________________
Date

FSU Human Subjects Committee Approved on 7/17/09 VOID after 7/7/10  HSC# 2009.2931
APPENDIX B

EATING ATTITUDES and BEHAVIOR SURVEY:
Pre-test, Post-test and Follow up
For each item, please circle the answer that best characterizes your attitudes or behaviors.

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>neutral</th>
<th>agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I try to avoid certain foods high in fat, carbohydrates, or calories.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I stop eating when I feel full (not overstuffed).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I find myself eating when I'm feeling emotional (e.g., anxious, depressed, sad), even when I'm not physically hungry.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. If I am craving a certain food, I allow myself to have it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I follow eating rules or dieting plans that dictate what, when, and/or how much to eat.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I find myself eating when I am bored, even when I'm not physically hungry.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I can tell when I'm slightly full.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I can tell when I'm slightly hungry.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I get mad at myself for eating something unhealthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I find myself eating when I am lonely, even when I'm not physically hungry.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I trust my body to tell me when to eat.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I trust my body to tell me what to eat.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. I trust my body to tell me how much to eat.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I have forbidden foods that I don't allow myself to eat.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. When I'm eating, I can tell when I am getting full.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. I use food to help me soothe my negative emotions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I find myself eating when I am stressed out, even when I'm not physically hungry.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. I feel guilty if I eat a certain food that is high in calories, fat, or carbohydrates.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. I think of a certain food as “good” or “bad” depending on its nutritional content.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. I don't trust myself around fattening foods.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. I don't keep certain foods in my house/apartment because I think that I may lose control and eat them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Please circle the response that reflects your agreement with these statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>disagree</th>
<th>neutral</th>
<th>agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Slim women are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Tall women are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Women with toned bodies are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Women who are in shape are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Slender women are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Women with long legs are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Curvy women are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Shapely women are more attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Circle the best response to describe your behavior over the last week:

<table>
<thead>
<tr>
<th>Behavior Description</th>
<th>never</th>
<th>seldom</th>
<th>Sometimes</th>
<th>often</th>
<th>always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If you put on weight, did you eat less than you normally would?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Did you try to eat less at mealtimes than you would like to eat?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. How often did you refuse food or drink because you were concerned about your weight?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Did you watch exactly what you ate?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Did you deliberately eat foods that were slimming?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. When you ate too much, did you eat less than usual the next day?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Did you deliberately eat less in order not to become heavier?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. How often did you try not to eat between meals because you were watching your weight?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. How often in the evenings did you try not to eat because you were watching your weight?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Did you take into account your weight in deciding what to eat?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

How have you been feeling about your appearance over the PAST FOUR WEEKS? Read each question and circle the appropriate number.

<table>
<thead>
<tr>
<th>Feeling Description</th>
<th>never</th>
<th>rarely</th>
<th>sometimes</th>
<th>often</th>
<th>very often</th>
<th>always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has feeling bored made you brood about your shape?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2. Have you been so worried about your shape that you have been feeling that you ought to diet?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3. Have you thought that your thighs, hips, or bottom are too large for the rest of you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4. Have you been afraid that you might become fat (or fatter)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5. Have you worried about your flesh not being firm enough?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. Has feeling full (e.g., after eating a large meal) made you feel fat?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7. Have you felt so bad about your shape that you have cried?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8. Have you avoided running because your</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Rating</td>
<td></td>
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<td>-------------------------------------------------------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Has being with thin women made you feel self-conscious about your shape?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Have you worried about your thighs spreading out when sitting down?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Has eating even a small amount of food made you feel fat?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Have you noticed the shape of other women and felt that your own shape compared unfavorably?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Has thinking about your shape interfered with your ability to concentrate (e.g., while watching television, reading, listening to conversations)?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Has being naked, such as when taking a bath, made you feel fat?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Have you avoided wearing clothes which make you particularly aware of the shape of your body?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Have you ever imagined cutting off fleshy areas of your body?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Has eating sweets, cakes, or other high calorie food made you feel fat?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Have you felt excessively large and rounded?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Have you felt ashamed of your body?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Has worry about your shape made you diet?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Have you felt happiest about your shape when your stomach has been empty (e.g., in the morning)?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Have you thought that you are the shape you are because lack of self control?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Have you worried about other people seeing rolls of flesh around your waist or stomach?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Have you felt that it is not fair that other women are thinner than you?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Have you vomited in order to feel thinner?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>When in company have you worried about taking up too much room (e.g., sitting on a sofa or a bus seat)?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Has seeing your reflection (e.g., in a mirror or shop window) made you feel bad about your shape?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Have you pinched areas of your body to see how much fat there is?</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Have you avoided situations where people could see your body (e.g.,</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What is your weight at present (please give your best estimate). ____________________
What is your height? (Please give your best estimate). _______________________
If female: Over the past three-to-four months have you missed any menstrual periods? ________________
If so, how many? _________________
Have you been taking the “pill?” _________________

Have you received counseling for eating behaviors and/or body image issues in the past 6 months?
○ yes  ○ no
How many counseling sessions have you attended in the past 6 months? ____________
Who provided the counseling?
○ Friend  ○ parent  ○ psychotherapist  ○ health professional  ○ nutritionist  ○ Other

Questions 1 to 12: Please circle the appropriate number on the right. The questions only refer to the past four weeks (28 days).

On how many of the past 28 days . . .

<table>
<thead>
<tr>
<th>No days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15 days</th>
<th>16-22 days</th>
<th>23-27 days</th>
<th>Everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Have you had a definite desire to have a totally flat stomach?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?

9. Have you had a definite fear of losing control over eating?

10. Have you had a definite fear that you might gain weight?

11. Have you felt fat?

12. Have you had a strong desire to lose weight?

13. Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?

14. On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?

15. Over the past 28 days, on how many DAYS have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?

16. Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?

17. Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?

18. Over the past 28 days, how many times have you exercised in a “driven” or “compulsive” way as a means of controlling your weight, shape or amount of fat, or to burn off calories?

Questions 19 to 21: Circle the appropriate number. Please note that for these questions the term “binge eating” means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating. The following questions are concerned with the past four weeks (28 days) only.
Questions 22 to 28: Please circle the appropriate number on the right. The questions only refer to the past four weeks (28 days).

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Markedly</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Has your weight influenced how you think about (judge) yourself as a person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23. Has your shape influenced how you think about (judge) yourself as a person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24. How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25. How dissatisfied have you been with your weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>26. How dissatisfied have you been with your shape?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>27. How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>28. How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
APPENDIX C

STUDENT COMMENTS FROM EATING DISORDERS, BODY IMAGE AND HEALTHY WEIGHT CURRICULUM
STUDENT COMMENTS FROM EATING DISORDERS, BODY IMAGE AND HEALTHY WEIGHT CURRICULUM

What Students Liked Most About the Class

“Being able to have class discussions about topics and realize how many people have been affected by this. I learned a lot about accepting your body and that the media created the “thin ideal . . .”

“Thin-ideal, role of the media, and intuitive eating”

“Loved our discussion, really helped me understand my own dangerous eating behaviors.”

“I loved having the opportunity to discuss the topics openly, it got everyone involved and it was a comfortable, non-judgmental atmosphere.”

“I learned things I never knew about dieting, eating, and having a healthy lifestyle.”

“In-depth conversations”

“Discussions. It was interesting to see what other college students thought of certain topics.”

“We talked about real life issues and applied them to our own lives. I never wanted to miss class because I wanted to partake in the discussions.”

“I recommend this class to everyone, it was a very enjoyable semester.”

“Discussions were interesting and insightful.”

“Everything! I thought every topic discussed was interesting and the class was never dull.”

“I loved the media and eating habits section, it really opened my eyes.”

“Learning ways to control eating and how to listen to my body naturally.”

“That we were able to express our true feelings in an open and safe environment.”

“Very well-thought out assignments were helpful and fun, made me re-evaluate my thinking process.”

What Students Liked Least about the Class

“Nothing”

“The time of the final exam.”

“The long journal readings.”

“The assignments, but I still enjoyed doing them.”

“I liked the class overall and there wasn’t anything I really didn’t like.”
“Nothing – fave class”
“Nothing really – I liked coming to this class so maybe when it ended!”

**Additional Comments**

“I feel everyone should take this class so they can improve the way they feel about themselves and help those close to them think positively about their body image”
“Great class, thank-you!”
“Very informational class that I would recommend to anyone.”
“Thanks so much for starting this class. I loved it and guarantee tons of other students will too.”
“Most interesting and stimulating class I’ve taken at FSU.”
“Very enjoyable and interesting class! I would recommend to my friends!”
“This class should be offered every semester and students should be required to take it!”
“Wonderful class and professor.”
“This has been one of my favorite courses at FSU. I talked more about what I learned in this class to friends and family than I did with any other course.”
“Keep this course!”
“I think this is a very educational and fun class! It has been one of my favorite classes at FSU. I learned a lot without being too stressed!”
“I feel that I am more accepting of my body after this class.”
“I am not a dietetics major and I chose to have this class because I was struggling with eating issues, not any disorders but I obsessed about my weight and what I ate. This class has completely turned around my mindset and I although I was always physically healthy, I am now emotionally healthy I think it should be mandatory for every college student and I have recommended it to all my friends!”
“Being an exercise science major I think this class should be required – far too often dietetics and exercise science majors get overly consumed with body/diet/exercise and this class really helps!”
“I really enjoyed this class. I think it should be required among students at this university because there are so many things we discussed in class that are misunderstood by most people. Taking this class would help many understand diet/nutrition/exercise better. Hopefully it’s offered in the future.”
REFERENCES


BIOGRAPHICAL SKETCH

Amy Foster Magnuson completed her Bachelor’s degree in Dietetics and Nutrition & Exercise and her Masters Degree in Sports Nutrition at Florida State University. In 1998, she was hired as the Sports Nutritionist for the FSU Athletic Department while also in private practice as a nutrition and exercise consultant. She completed her dietetic internship in 2000 and became a Registered Dietitian. In 2003, she began working full time in the Thagard Student Health Center. As Florida State University’s Health Promotion Director, she coordinates the health and wellness services for FSU students. Amy’s research interests include evidence-based methods to reduce health risks and promote good health for college students.