AN ABSTRACT OF THE DISSERTATION OF

Rebecca Y. Concepcion for the degree of Doctor of Philosophy in Exercise and Sport Science presented on August 21, 2007.

Title: Weight Stigma Consciousness and Perceived Physical Appearance: Their Key Precursors and Relationship to Health Behaviors.

Abstract approved:

Vicki Ebbeck

The purpose of this study was to explore the relationships between weight stigma consciousness, perceived body appearance, social physique anxiety, and the health outcomes of physical activity levels and eating behaviors. Select precursors were also examined. These relationships were based on Harter's model of self-worth. Two-hundred fifteen adults with a BMI of $\geq$ 25 completed a set of online questionnaires. Structural equation modeling was used to examine the relationships of interest. Weight stigma consciousness (.67) loaded more heavily on social physique anxiety than did perceived body appearance (-.35). The variance explained for social physique anxiety was 69%. Fifty-four percent of the variance was explained in disordered eating, but only 5% of the variance was explained for physical activity. This study demonstrates the powerful impact of weight discrimination on the health behaviors of people with excess weight.

Weight Stigma Consciousness and Perceived Physical Appearance: Their Key Precursors and Relationship to Health Behaviors

by
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A DISSERTATION

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

Presented August 21, 2007
Commencement June 2008

Doctor of Philosophy dissertation of Rebecca Y. Concepcion presented on August 21, 2007.

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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

Rebecca Y. Concepcion, Author

ACKNOWLEDGEMENTS

I would like to extend my deepest gratitude to my major professor, Dr. Vicki Ebbeck, for her professionalism, inspiration, and commitment to my development as a researcher and academician. Ralph Waldo Emerson said, “A chief event of life is the day in which we have encountered a mind that startled us.” I credit and thank Dr. Ebbeck for such action in my life.

To my graduate committee, Dr. Bradley Cardinal, Dr. Patti Lou Watkins, Dr. Marjorie Reed, and Dr. Wayne Kradjan, I give my heartfelt thanks for their professional expertise and thoughtful feedback that became a central force in shaping this study.

To my colleague and friend, Ben Li, my gratefulness for statistical support. To Ian and Glenys Lowen-Thomas, my dear friends, I give my thanks for their assistance in recruitment of participants, but mostly for their love and confidence in me. I would also like to extend my gratitude for the support of many friends who sustained me and my family while I pursued these professional endeavors. To Sheila, Scott, Angela, Sara, Gene, Jan, Sandy, Tucker, I am ever thankful for your friendship.

To my sister, Von Marie, and her family, Tom, Nicholas, and Jonathan, my appreciation for sharing my experience and for the countless ways they were supportive.

To my children, Sadie and Kennedy, my everlasting gratitude for being my biggest champions. To my husband, Paul, my very deepest gratitude for always believing in me and my dreams.

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Weight Stigma Consciousness and Perceived Physical Appearance: Their Key Precursors and Relationship to Health Behaviors

Introduction

The prevalence of overweight and obesity continues to increase in United States citizens of all ages (Ogden et al., 2006). Professionals in multiple disciplines endeavor to decipher the influences on health behaviors for this population, with the goal of creating a positive impact on the health of these individuals. One area that deserves further examination is the influence of stigma on personal self-worth. Stigma is the socially constructed, negative evaluation of a person due to their group membership resulting in the loss of status and discriminatory practices against members of the target group (Link & Phelan, 2001). People who are overweight or obese may be the most commonly and severely stigmatized groups in the United States (Crocker, Cornwell, & Major, 1993) due, in part, to the perception, right or wrong, that unlike race or gender, weight is controllable and thus people who are overweight are responsible for any discrimination they experience (Quinn & Crocker, 1999).

Thus, it was the aim of this study to investigate how the internalization of weight stigma and perceived physical appearance impact overweight people's self-worth and ensuing health practices, specifically physical activity levels and eating behavior. This study also examined select precursors of weight stigma consciousness and perceived physical appearance and has extended the research on weight stigma through the utilization of Harter's (1987) self-worth model. This model provides a theoretical framework whereby self-worth is derived from self-perceptions such as

perceived physical appearance and social feedback about oneself in this case in the form of weight-related stigma.

Weight Stigma Consciousness and its Relationship to Psychological Variables

Overweight is defined as a body mass index (BMI), a weight-to-height ratio (kg/m^2), equal to or greater than 25 while obesity is defined as a BMI equal to or greater than 30 (World Health Organization, 2003). Currently, over 64 percent of adult Americans are classified as overweight or obese (Centers for Disease Control and Prevention, 2005). These data demonstrate the vast number of people in the United States who may effectively bear the brunt of this social stigma. However, a clinical measure of overweight or obese status may not be the only designation necessary for one to experience negative psychological effects of weight status. People of normal weight, who self-classified as overweight or who have a history of being overweight or obese, experienced body dissatisfaction and may equally perceive prejudicial treatment (Annis, Cash, & Hrabosky, 2004; Cash & Hicks, 1990).

Not surprisingly, people who experience negative evaluations by others in a broad spectrum of their lives, including by professionals in the health field (Teachman & Brownell, 2001), experience psychological distress. Myers and Rosen (1999) found that the more stigmatization people were exposed to, the lower their self-worth and the poorer their physical self-worth, specifically related to their weight and shape. Additionally, the heavier people were, the more participants reported stigmatizing experiences and obesity-related problems, and they experienced worse overall mood, anxiety, and depression (Karlsson, Taft, Sjörström, Torgerson, & Sullivan, 2003;

Roberts, Deleger, Strawbridge, & Kaplan, 2003; Siegel, Hyg, Yancey, & McCarthy, 2000).

Perceived Physical Appearance and Psychological Well-being

Research into self-esteem, or how people feel about themselves, has repeatedly demonstrated the importance of physical appearance in Western culture. Fox's (1997) review of this literature included the importance of physical appearance to self-esteem across the life-span. He emphasized the magnitude of this construct by saying appearance, "…represents one of the most robust self-concept findings that we have and probably holds a key to our understanding of self-esteem processes in general" (p. 123). To clarify, self-concept is how one would describe oneself whereas self-esteem and self-worth include an evaluation of the self (Fox, 1997). Harter (1999) has found similar importance for perceived physical appearance to self-esteem. In fact, of the five competence scores used to correlate with global self-worth, a term used interchangeably with self-esteem, perceived physical appearance yields the highest average correlations of .65 for United States residents. Both Harter (1984) and Fox (1997) were clear to emphasize that the physical appearance must hold a certain level of importance for it to be meaningful to an individual's self-worth. Additionally, there exists strong evidence for anxiety and depression being related to perceived body appearance and overweightedness that may increase risk for eating disordered behavior (Thompson & Chad, 2002; Werrij, Mulkens, Hospers, & Jansen, 2006).

Social Physique Anxiety

Overweight women and those with higher levels of body fat also tend to suffer more body image-related anxiety, specifically anxiety resulting from their concern that

their figure is being evaluated by others, called social physique anxiety (Hart, Leary, & Rejeski, 1989; Hausenblas & Fallon, 2002). This concern has been associated with lower levels of exercise in college-aged women (Crawford & Eklund, 1994). Hausenblas and Fallon found that men and women varied on predictors of social physique anxiety (SPA). For men, exercise levels, specifically low levels of exercise, were implicated in higher levels of SPA. For women, higher BMIs corresponded with higher levels of SPA. Other research utilizing an exercise intervention with middle aged men and women found that physical activity decreased SPA in both genders (Loland, 2000). Body image-related anxiety may also impact eating behaviors. Young females with higher levels of SPA scored higher on the body dissatisfaction and drive for thinness subscales of the Eating Disorder Inventory, putting them at greater risk for developing an eating disorder (Thompson & Chad, 2002).

Conceptual Framework

To better understand how these aspects of self-information relate to each other and certain health behaviors, we turn to Harter's (1999) model of self-worth, operationalized and tailored to the physical domain. This model is a confluence of Cooley's (1902) "looking glass self" whereby one's concept of self is socially informed and constructed by the feedback perceived to be provided by others, and James' (1890) view of self in which an individual's self-perceptions, in various domains, and their salience are integrated into self-concept. These two sources of self-information are posited as the determinants of self-worth which, in turn, directly impacts one's affect and, ultimately, behavior. Self-worth is also theorized to directly

impact behavior in this model, although to a lesser degree than the indirect relationship via affect.

Thus, if an overweight person is aware of weight-related discrimination directed towards them, Cooley's perspective, and they feel that they do not measure up to society's ideal for physical appearance which they value, a Jamesian viewpoint, they are likely to experience a lower physical self-worth and negative affect. Behaviorally, this process would exhibit itself in low levels of activity and maladaptive eating behaviors. These relationships were partially supported in Ebbeck and colleagues' (Ebbeck, Watkins, & Levy, 2004) recent work with larger women, which demonstrated that social physique anxiety mediated self-conceptions, including global self-worth and perceived physical appearance, and the women's eating behaviors, although not physical activity.

Precursors to Weight Stigma Consciousness and Perceived Physical Appearance

Gender. Gender differences are evident in both perceived physical appearance measures and weight stigma levels, thus gender is predicted to have a significant impact on how these constructs affect health behaviors. Women tend to suffer more negative impact than males of not meeting gender-specific physical ideals (Cash & Roy, 1999; Miller & Downey, 1999). Therefore, gender was used as a predictor for weight stigma consciousness and perceived physical appearance. We hypothesized weight stigma consciousness to be higher and perceived physical appearance to be lower for women.

Exercise self-schema. People who are perceived to be physically active, athletic, or exercisers experience a halo effect for both physical and personality

attributes. Self-presentation, or impression management, literature in sport and exercise psychology has shown that exercisers are viewed as harder workers, more confident, and possessing greater self-control. They are seen as happier and friendlier, as having more friends, being braver, more intelligent, more sexually attractive, and tidier than nonexercisers (Martin, Sinden, & Fleming, 2000). When Martin and Leary (2006) further examined this relationship adding the context of weight, they found that overweight exercisers were viewed as more attractive than overweight and average weight nonexercisers. While controlling for the influence of weight status, it was demonstrated that the exercise behavior of an individual positively influenced others' perceptions about the individual's personality, confirming Martin et al. (2000) earlier findings that exercisers were viewed as possessing a more positive personality (Martin & Leary, 2006).

Given that our culture views exercisers in such a positive light, it follows to examine whether or not exercisers view themselves similarly. Researchers have identified people who see themselves as exercisers, termed "exercise schematic" by Kendzierski (1988), and found that this self-definition is positively correlated with exercise behavior (Estabrooks & Courneya, 1997; Kendzierski, 1988) and intentions to exercise (Estabrooks & Courneya, 1997). Exercise schematics also held less stable attributions for lapses in exercising when compared to persons without an exercise self-schema (Kendzierski, Sheffield, & Morganstein, 2002) and thus were more likely to return to exercise after a lapse.

If exercise schematic people indeed exercise more, we may presume that they will experience the psychological benefits of exercise, that of less depression and

anxiety, and that they possess a more positive self-concept (Hays, 1999; Sonstroem, Harlow, & Josephs, 1994). Other work that has also addressed self-schema or identity in the physical domain examined athletic identity (Brewer, Van Raalte, & Linder, 1993) and psychological factors. Researchers have found that experienced male body builders and weightlifters with high levels of athletic identity have lower levels of social physique anxiety when compared to inexperienced bodybuilders who possess lower levels of athletic identity (Hurst, Hale, Smith, & Collins, 2000).

Markus' (1977) early work found that when one receives feedback that is counter to their self-schema, the information is resisted and discounted. Holding an exercise self-schema may then, also, serve as a buffer of sorts to low levels of perceived physical self-worth due to overweightedness. Thus, people with an exercise self-schema were expected to experience less weight stigma and hold a more positive view of their perceived physical appearance than people without an exercise self-schema. According to these cited works, this may be accomplished in two ways: one, through garnering the psychological benefits of being a regular exerciser and two, through refusing to accept or incorporate into one's self-concept the weight-biased treatment by others.

Body mass index. A meta-analysis (Miller & Downey, 1999) of 91 effect sizes from studies that examined the relationship of overweight and self-esteem demonstrated that being overweight is negatively correlated with self-esteem (d = -.36). The highest effect sizes were found when studies utilized perceived overweight status (d = -.73) versus actual weight (d = -.24), which the authors theorized may indicate the higher psychological costs of stigmatizing oneself rather than receiving

weight discrimination from others. Higher levels of BMI within overweight and obese people have been linked to greater levels of depression, lowered self-esteem, and disordered eating (Werrij, Mulkens, Hospers, & Jansen, 2006). Additionally, people with higher BMIs experience more stigmatizing events (Myers & Rosen, 1999). Based on this research, and the presumption that these findings will hold true for our sample, we anticipated that higher levels of BMI would increase participants' perceptions of weight stigma and lower their perceived physical appearance.

Perceived weight status. Women of normal weight, who self-classified as overweight, experienced body dissatisfaction (Cash & Hicks, 1990) and thus may also perceive stigmatization. Men of normal weight who identified as overweight viewed themselves more negatively than overweight men who self-classified as overweight (Cash & Hicks, 1990). Annis and colleagues (Annis, Cash, & Hrabosky, 2004) determined that average weight women who had historically been overweight were preoccupied with being overweight and had a dysfunctional level of appearance investment, or concern about their appearance, equal to women who were currently overweight. Thus, there remained a residual psychological effect of having been heavy. We expected that perceived weight status would impact perceptions of weight stigma consciousness and perceived physical appearance in a way that is similar to having a higher BMI, in that those who perceive themselves to be considerably overweight would feel that they are stigmatized because of their weight and would hold poor perceived physical appearance.

Age. Although perceived body attractiveness is an important self-concept across the lifespan, it may have less impact as people age (Cash, Winstead, & Janda,

1986). Perlini and colleagues have found that both men and women are seen as less attractive, less socially desirable, and less resourceful as they age (Perlini, Bertolissi, & Lind 1999; Perlini & Lippe, 2006; Perlini, Marcello, Hansen, & Pudney, 2001). Tiggemann and associates have determined that the importance of physical appearance becomes less influential to women as they mature (Tiggemann & Lynch, 2001), that middle-aged women, when compared to older women, had more body dissatisfaction and lowered self-esteem (Tiggeman & Stevens, 1999), and that as women enter their 50s and 60s, they become less ascribed to the thin-ideals of younger women and show improvements in body image and self-concept (Webster & Tiggemann, 2003). Tiggemann's (2004) review of lifespan body image research indicated that, overall, body dissatisfaction remains relatively stable across the lifespan for women, but that importance of the body does decrease as women age. It was hypothesized in this study that younger and middle-aged adults would experience more weight stigma consciousness and lower levels of perceived physical appearance than older adults.

Therefore, from the vantage of Harter's (1989) self-worth perspective, two models may elucidate the relationships between weight stigma consciousnesses, perceived body attractiveness, physical self-worth, and behavior. As well, gender, exercise self-schema, perceived weight status, BMI, and age served as precursors to these relationships. The following models were tested: (a) The physical self-worth (PSW) mediated model: Perceived physical appearance and weight stigma consciousness would be antecedents to physical self-worth, and that physical self-worth would act as a mediator between these two antecedents and social physique anxiety and the outcome behaviors of physical activity and disordered eating; (b) the

alternative (ALT) model: Nested within the PSW mediated model, direct paths from perceived physical appearance and weight stigma consciousness to both physical activity and disordered eating are added. This mimics the alternative model Harter tested with the fit of the original self-worth mediated model (Harter, 1987). The practice of testing competing models provides an opportunity to compare theory-based models, as well as to evaluate the most economical and informative fit of the data to each model (Byrne, 2001).

It is notable that while this study was theoretically informed by Harter's (1987) study of global self-worth, we have tailored the constructs to specifically equate to comparable constructs within the physical domain. In that, Harter's general global self-worth has been replaced by physical self-worth. The antecedents to self-worth have been converted from Harter's original competence and social support constructs to perceived physical appearance, a physical competency (Fox, 1990), and weight stigma consciousness, a form of body-related social support. In addition, the outcome variable of motivation from Harter's composition has been operationalized in this study as the behaviors of physical activity and disordered eating.

The current research addressed several points made by Puhl and Brownell (2001) in their review of bias and obesity by taking a theoretical approach to understanding weight stigma, specifically the effects of weight stigma consciousness on peoples' physical activity and eating behaviors. Additionally, this study addressed the call to further research predictor variables of body image disturbances in overweight people, to research areas that might provide protection from weight-related

discrimination, and to improve our understanding of how the physical self is related to people's health (Schwartz & Brownell, 2004).

Method

Participants

In order to fully investigate the potential of weight-related discrimination, this cross-sectional investigation recruited adults who possessed a BMI of 25 or greater. After receiving approval from the university's Institutional Review Board, 259 adult participants were recruited through flyers (see Appendix A) at local colleges and universities (24%), newspaper announcements (17%), topical website postings (17%), word of mouth (17%), notices posted in businesses (14%), physicians' clinics (8%), and weight loss clinics (3%) within the Northwest region of the United States. Although they indicated interest in participating in the study and were sent instructions and a uniform resource locator (URL) to the survey, twenty-eight (11%) people did not access the online survey. Sixteen participants (6%) did not complete the survey leaving 215 (157 females, 58 males) people for the analysis. This sample size exceeded 200, the minimum requirements for structural equation analysis used in this study (Li & Harmer, 2006).

The mean age of participants was 43 years (SD = 13), and the majority were married or partnered (68%) women (73%). The predominant ethnicity was Caucasian (82.3%), followed by Hispanic (5%), multi-ethnic (4.2%), and approximately 2% identified as American Indian, Asian, or African American. The majority of participants (91%) had some college education. Thirty-two percent of the sample had some college. Thirty-two percent had an undergraduate degree, approximately 17%

had a graduate degree, and another 9% indicated the completion of some graduate work. Just over 9% had their high school diploma or General Educational Development (GED) certificate. The median income of participants was $60,000 (*SD* = $45,869), one-third greater than the U. S. median household income of $44,334 (U. S. Census Bureau, 2007). The mean weight of the group was 205 lbs. (*SD* = 45) which had been maintained for just over 2 years (*SD* = 2.9). The mean BMI was 32.9 (*SD* = 7) and 41% of the sample were classified as overweight (BMI 25-29.9) and 59% were obese (BMI $\geq$ 30).

Procedures and Measures

Interested participants were asked to contact the researchers by phone or electronic mail, at which time their contact information, height, and weight were requested and recorded to insure that they met the enrollment criteria. They were then given the URL address for the online survey. Participants were given one of six URLs for one of six survey sites. Each survey site contained the same set of questionnaires in various arrangements using "Williams' designs" Latin squares (Williams, 1949) to control for order effects. Four people requested paper copies of the survey, which were mailed to their home and returned via a supplied postage-paid envelope. The bank of questionnaires took approximately 15 minutes to complete and was followed by general information about health, weight, and available resources for weight-related issues (Appendix B). All participants had the option of being entered into a 1-in-50 chances drawing for a $50 variety store gift card once they completed the questionnaires.

The data were stored on the survey website and the researchers' computer to which only the researchers had access. Participant identity was protected by securing the computer that contained the link files of participants and identification numbers in an office that only researchers could access. As well, participants' identities were protected as much as their computer systems allowed whilst sending personal information over the internet.

Six measures were used to examine the relationships of interest. They included two measures for the antecedents of physical self-worth: weight stigma consciousness (WSC) and perceived body attractiveness (Body); one measure of physical self-worth (PSW); one measure to evaluate affect: the social physique anxiety scale (SPA); a measure each for the two outcome variables of interest: physical activity behavior (PA) and disordered eating behavior (EAT); and a measure to assess each of the five precursor variables that are hypothesized to influence the antecedents: gender, exercise self-schema (ESS), BMI, perceived weight status (PWS), and age. Additionally, participants were asked to complete a short demographic questionnaire to assist in the population description.

Weight stigma consciousness. The Weight Stigma Consciousness Questionnaire, adapted from Pinel's (1999) stigma consciousness questionnaire which had originally been developed to determine the degree in which a woman believed their stereotyped status impacted their interactions with men. Our adjustment to the measure included changing woman to overweight person and man/men to average weight people. With these amendments, we examined overweight people's perceptions of how average weight people view them on the basis of stereotype about overweight

people (Appendix C). Participants indicated to what extent they agreed with each statement utilizing a scale from 0 to 6, or from strongly disagree to strongly agree, with 3 representing a midpoint of neutrality, neither agree nor disagree. Pinel (1999, 2002; Brown & Pinel, 2003) has tested this measure with minority groups, women, and people of color to determine perceived stigma based on their membership to each respective group. The questionnaire has faired well with such adjustments and the alpha reliability coefficients were acceptable and convergent validity was demonstrated (Pinel, 1999). The alpha coefficient in this study was .85.

Perceived body attractiveness. A subdomain of Fox's (1990) Physical Self-Perception Profile, perceived body attractiveness (BODY; Appendix D) is measured with six items in a forced-choice structured-alternative item response format. Participants were asked to choose between two opposing statements for the one that best represents them ("some people are extremely confident about the appearance of their body" but "others are a little self-conscious about the appearance of their bodies") and then consider the degree to which the selected statement is most like them by responding either "really true for me" or "sort of true for me." Items include statements about having an attractive body and one's ability to maintain an attractive body. Responses are given a value from one to four and then averaged. Higher scores indicate a more positive perception of perceived body attractiveness. This subscale is consistently reliable for both males and females and has been shown to have construct validity (Fox & Corbin, 1989). The alpha coefficient in the current study was .83.

Fox (1990) follows Harter's suit and includes two additional items in this scale to ascertain the perceived importance for an attractive body (BODYIMP). They are

presented and scored in the same format as for six items of the BODY measure. Higher scores on BODYIMP indicate that perceived attractive body had a greater influence on perceived physical self-worth than for those participants who give it less importance. A discrepancy score is calculated between the BODYIMP and the BODY score for any individual whose BODYIMP total score is greater than 5. The BODYIMP score is subtracted from the total scores of the six items for BODY. Test-retest reliability coefficients for BODYIMP are acceptable and validity has been established through testing of social desirability influence as well as principal component factor analyses (Fox & Corbin, 1989). An acceptable alpha coefficient was calculated for this study, .69.

Physical self-worth. The superordinate level of the Physical Self-Perception Profile (Fox & Corbin, 1989) measures global physical self-worth with six items and is a structured-alternative format questionnaire (Appendix E). Like the subdomain of perceived body attractiveness, it offers two contrasting viewpoints of the physical self. The participants were asked to determine which position is most like theirs and then indicate the degree to which that perspective is like theirs. The statements include reference to physical self-confidence, pride, and positive feelings. Scoring for this measure was calculated by totaling the values for each response, from one to four, and then averaging. Higher scores indicate a more positive sense of physical self-worth. Alpha reliability coefficients (Fox, 1998) and alpha validity coefficients are high for this scale (Marsh, Asci, & Tomás, 2002). The alpha reliability coefficient was .86 in the present investigation.

Social physique anxiety. An affect measure related to body image, the Social Physique Anxiety Scale (SPAS) was developed by Hart, Leary, and Rejeski (1989) to determine the level of anxiety people experience when they believe their body is being evaluated by others (Appendix F). Item 2 of the SPAS was reworded to read positively, "I would worry about wearing clothes that might make me look too thin or overweight," versus the original negative phrasing, per the findings of Eklund, Kelley, and Wilson (1997). Participants indicated to what degree the statements are true for them on a 5-point Likert scale that is anchored by "not at all" (1) to "extremely" (5). These numbers are totaled with higher scores indicating greater levels of SPA. The SPAS has demonstrated good psychometric properties including construct validity coefficients of .90 (Hart, Leary, & Rejeski, 1989), as in this study with an alpha value of .94.

Physical activity behavior. The Leisure-Time Exercise Questionnaire (Godin & Shepard, 1985) quantified the participant's amount of physical activity at mild, moderate, and strenuous levels over the course of a typical week's time (Appendix G). Participants' responses to these three levels of physical activity are multiplied by 3, 5, or 9 respectively to calculate a figure representing exercise metabolic equivalent tasks, more commonly called METs. This questionnaire has been found to be reliable and valid with various populations (Jacobs, Ainsworth, Hartman, & Leon, 1993). In the current study the alpha coefficient was .68.

Disordered eating behavior. Four subscales of disordered eating were assessed with the Eating Disorders Examination-Questionnaire, (EDE-Q, Fairburn & Beglin, 1994). The subscales include Restraint, Eating Concern, Shape Concern, and Weight

Concern as well as behavioral indicators. The subscale scores were averaged to create a global score which provided an overall rating of eating disordered psychopathology. Respondents were asked to consider the previous 28 days when answering the questionnaire and to indicate the number of days that they practiced certain behaviors. For items that asked respondents to indicate the number of days they engaged in a certain eating behavior, those answers were converted to 7-point scales (0-6) as described by the authors in which 0 is "absence of the feature," 1 for "feature present on 1-5 days," 2 for "feature present on 6-12 days," 3 for "feature present on 13-15 days, 4 for "feature present on 16-22 days," 5 for "feature present on 23-27 days," and 6 for "feature present every day." This conversion allowed for combining with other subscale items that used a 0-6 scale of degree as the response format. That scale was 0 for "not at all," 2 for "slightly," 4 for "moderately," and 6 for "markedly." A high level of agreement has been found between the questionnaire and its predecessor, an interview format of the questionnaire (Fairburn & Beglin, 1994). Good concurrent validity and criterion validity have been determined for this measure (Mond, Hay, Rogers, Owen, & Beumont, 2004). Additionally, Luce and Crowther (1999) report excellent test-retest reliability and internal consistency for four subscales of the EDE-Q, specifically Restraint, Eating, Shape, and Weight Concern (Appendix H). Scoring of the EDE-Q is accomplished by adding together the ratings for the items of each subscale and dividing the sum by the total number of items forming the subscale. A global score for a measure of disordered eating is arrived at by summing the subscale scores and dividing by four. In this study the alpha coefficient for the EDE-Q was .87

Exercise self-schema. The Exercise Self-Schema measure (Kendzierski, 1988) evaluates whether or not a person describes themselves as an exerciser and if they consider this self-description to be an important aspect of their self-image. Participants were asked to indicate their level of agreement to the following statements, "I am someone who exercises regularly," "I am someone who keeps in shape," and "I am someone who is physically active." An 11-point scale was used with the anchors of "does not describe me" at 1 and "describes me" at 11. Additionally, participants were asked to rate the importance of each descriptor to the image they have of themselves, regardless of how much the item actually describes them. Again, an 11-point scale is used, but the anchors were "not at all important" at 1 to "very important" at 11 (Appendix I).

The scoring criterion for exercise schematic was met when a minimum of two of the three exercise descriptor items were marked as extremely descriptive at an eight or greater and two of the three importance to self-image items as extremely important, an eight or higher. Those participants who did not meet this standard were classified into a "no exercise self-schema" group (Kendzierski, Sheffield, & Morganstein, 2002). Psychometrics for the scale are acceptably reliable as demonstrated by internal consistency reliability (Kendzierski, Sheffield, & Morganstein, 2002) and convergent validity when compared to exercise behavior measures (Kendzierski, 1988). This measure was found to be reliable in this study with an alpha coefficient of .84.

Demographics

A background information questionnaire (Appendix J) was used to obtain participant information that facilitated description of the sample group: age, ethnicity,

relationship status, education level, and income. Additionally, with regard to the precursor variables, questions regarding self-reported height, weight, age, and perceived weight status, i.e. do you see yourself as very underweight, slightly underweight, average weight, slightly overweight, or very overweight (Wardle & Johnson, 2002), were included.

Data Analysis

We employed Harter's (1987) model of self-worth as a basis for the construction of the proposed structural models. Through competing structural models we examined the relationships between perceived body appearance and weight stigma consciousness to physical self-worth, social physique anxiety, and health behaviors, specifically physical activity and disordered eating. Moreover, we determined the level of impact played by the identified predictors of interest, that of gender, exercise self-schema, perceived weight status, BMI, and age. Stata 9.2 (StataCorp, 2007) was used to screen the data for multivariate normal distribution and statistical outliers as they can negatively affect the model fit indices (Byrne, 2001). Tabachnick and Fidell (2001) designate scores greater than three standard deviations from the mean as outliers, however, no outliers were found.

A measurement model was tested initially to insure adequate validity and reliability for each latent construct and to respecify the models as needed. The structural models were tested to examine the relationships between the constructs. The measurement and structural models were tested with structural equation modeling (SEM) using Mplus 4.1 (Muthén & Muthén, 2007) with maximum likelihood robust

(MLR) estimation, commonly used when the data are not normally distributed (Chou & Bentler, 1995) as was the case in this study.

Multiple fit indices were used to determine the adequacy of the models (Byrne, 2001). These include a non-significant chi-square, the Normed chi-square, the comparative fit index (CFI), the Tucker-Lewis fit index (TLI), and the root mean square error of approximation (RMSEA). A nonsignificant chi-square indicates a good fit of the model to the data in that there is not a significant difference between the proposed covariance matrix and the sample covariance matrix. The chi-square statistic is particularly sensitive to sample size and typically indicates a significant relationship (Byrne, 2001). Thus, other fit indices are also consulted. The Normed chi-square value is the ratio between the chi-square and degrees of freedom (*df*) with values between 1.0 and 5.0 considered acceptable fit (Schumacker & Lomax, 1998). The acceptable level of fit indices for the CFI and the TLI are based on a value > .90 to confirm goodness of fit of the model to the data (Byrne, 2001). A good fit is indicated by a RMSEA of < .08-.06 and an excellent fit is indicated by a RMSEA of <.05 (Browne & Cudeck, 1989; Byrne, 2001). When comparing the models, that with the highest degrees of freedom and a low chi-square indicates the best model as it is more restrictive, yet does not change the chi-square in a statistically significant way (Byrne, 2001).

Each model was tested with the precursors of gender, exercise self-schema, perceived weight status, BMI, and age to determine their predictive value to these relationships. According to the literature, each precursor should have an impact on perceived physical appearance and weight stigma consciousness.

Results

The Measurement Model.

The measurement model tests the validity and reliability of the indicators to predict the latent construct. Upon initial examination of the measurement model, two indicators of WSC had loadings <.32, considered the minimum loading to interpret a variable as contributing to a factor (Tabachnic & Fidell, 2001). Therefore, those indicators were removed from the model. Additionally, one pair of WSC indicators and three pairs of SPA indicators were highly correlated (> .80) with each other, hence their errors were correlated to account for overlapping variance.

Upon further examination of the measurement model output, results revealed that physical self-worth (PSW) and perceived physical appearance[1] were nearly perfectly correlated (see Table 1). Because of the multicollinearity this causes and the poor discriminate validity of these two factors, PSW was removed from the model (Tabachnic & Fidell, 2001). This effectively eliminated the ability to test the PSW mediated model. The measurement model was subsequently rerun and demonstrated adequate fit of the model to the data (see Table 2).

With the removal of PSW from the models, social physique anxiety now acted as a sole mediator between antecedents and behavior in the two models. The proposed models were: (a) The social physique anxiety (SPA) mediated model: Perceived physical appearance and weight stigma consciousness had a direct impact on social physique anxiety and that SPA acted as a mediator to physical activity and disordered eating; (b) The alternative (ALT) model: Nested within the SPA mediated model, the ALT model replicates the SPA mediated model, but includes direct paths from

perceived physical appearance and weight stigma consciousness to physical activity and disordered eating (see Figure 1).

The Structural Model.

The hypothesized relationships in this study were examined to determine the strength of relationships among factors and the amount of variance explained by each factor. The fit indices for both models, found in Table 2, indicate minimal differences in the chi-square, the Normed chi-square, the CFI, and the TLI between the two models. Comparison of the two models with a chi-square difference test yielded a non-significant difference in chi-square of 2.479 and 4 degrees of freedom ($p > .05$; Byrne, 2001). Moreover, the additional direct paths within the ALT model, those between perceived physical appearance and weight stigma consciousness to physical activity and disordered eating, were small and non-significant. Thus, the SPA mediated model was the most parsimonious and informative model of the two.

The significant loadings and percentage of explained variance for the SPA mediated model are presented in Figure 2. Both antecedents of SPA had a significant effect on SPA: higher levels of perceived physical appearance had a negative effect on social physique anxiety (-.35) and higher levels of weight stigma consciousness resulted in greater levels of social physique anxiety (.67). Higher levels of SPA negatively impacted physical activity levels (-.22), while positively influencing disordered eating behavior (.74). The indirect effects include the influence of perceived physical appearance on physical activity at .08 and on disordered eating of -.25. The indirect effect of weight stigma consciousness on physical activity was -.15 and .50 on disordered eating.

Only three of the hypothesized five precursors were significant in influencing the factors of perceived physical appearance and weight stigma consciousness. Gender, specifically being female, decreased one's perception of physical appearance (-.33) and increased a sense of weight stigma (.37). Interestingly, perceived weight status (PWS) and BMI acted on different antecedents. Higher levels of PWS negatively influenced perceived physical appearance but had no effect on weight stigma consciousness. In contrast, higher levels of BMI were significantly related to increased feelings of weight stigma but not perceived physical appearance. The precursors age and exercise self-schema showed a trend towards significance (critical ratios (C.R.) of -1.91 and -1.88 respectively, where a C.R. $\geq$ 1.96 is considered significant; Byrne, 2001) in their relationship with weight stigma consciousness (loadings of -.12 each).

Gender and PWS explained 25% of the variance in perceived physical appearance, whereas gender and BMI accounted for 32% of the variance in weight stigma consciousness. Together the two antecedents, perceived physical appearance and weight stigma consciousness, and the significant precursors, gender, PWS, and BMI, were accountable for 69% of the variance in SPA. Finally, the relationships in this model combined to account for 5% of the variability in physical activity and 54% of the variability in disordered eating behavior.

Discussion

The aim of this research was to understand how the constructs of weight stigma consciousness and perceived physical appearance relate to affect and subsequent conduct. Specifically, this investigation encompassed the relationships

between weight stigma consciousnesses and perceived body attractiveness, their connection to social physique anxiety which served as a mediator to important health behaviors, physical activity levels and disordered eating. Both weight stigma consciousnesses and perceived body attractiveness exerted a significant effect on social physique anxiety and indirect effects on physical activity levels and eating patterns. Additionally, social physique anxiety was shown to impact both these behaviors, albeit a much stronger effect on disordered eating. Unfortunately, the construct of physical self-worth was removed from the model due to its similarity to perceived physical appearance. It may be true that in this population physical self-worth is intertwined with perceived physical appearance, especially given the non-concealable nature of overweight and its position as a stigmatized condition in our society. Nevertheless, the hypothesis of the SPA mediated model was supported.

The relationships investigated included an inquiry into the nature and level of influence certain precursors might have on the antecedents, weight stigma consciousnesses and perceived body attractiveness. The hypothesis for the five precursors, gender, ESS, PWS, BMI, and age, were partially supported. We found that only gender, PWS, and BMI were significant. Gender loaded on both perceived physical appearance and weight stigma consciousness. This was fully expected given the literature on gender differences and societal expectations related to body ideals. Perceived weight status loaded only on perceived physical appearance and not weight stigma consciousness, indicating that participants' perceptions of their weight is related to their beliefs about their own physical attractiveness, but not how others view them or treat them as might be revealed with a measure of weight discrimination.

Perhaps, this effect between PWS and perceived physical appearance was due to the nature of self-evaluation of both measures whereas the weight stigma consciousness measure focuses on how an individual believes others to perceive them. Body mass index loaded only on weight stigma consciousness, which aligns with literature that indicates people with higher BMIs experience more weight-related discrimination (Myers & Rosen, 1999). The difference in the influences of PWS and BMI suggest that the respondents had a fairly accurate perception of the stigma directed towards them, that true weight bias was related to actual body size and not potentially inaccurate perceptions of body weight.

Exercise self-schema (ESS) only approached significance in its relationship to weight stigma consciousness. The dichotomous nature of the ESS scoring, which resulted in only 29 people in our sample identified as exercise schematics, may be, in part, responsible for this outcome. Age, although approaching significance, also did not come into play in the model. One explanation might be that the associations are more complex and would be better captured via non-linear terms. For example, it was age by exercise status that was found to garner improvements in perceptions of appearance in post-menopausal women (Shaw, Ebbeck, & Snow, 2000). Another consideration with regard to the nonsignificant relationship is that perhaps the trends pertaining to age observed in the literature may not hold true for the overweight and obese individuals who participated in this study because the majority of the participants were still at an age where appearance was relatively important to them.

The relationships between perceived physical appearance, social physique anxiety, and disordered eating behavior found in this study echo results within similar

populations whereby the people with lower levels of perceived physical activity and higher levels of social physique anxiety also demonstrated poorer eating behaviors (Ebbeck, et al., 2004). Thus, improving the self-conceptions of overweight individuals and finding ways to minimize their physique anxiety may improve their psychological well-being and their health behaviors. While this model did a worthy job explaining the variance in disordered eating behavior it minimally accounted for the variance in exercise behavior. The distribution of scores on this variable was highly skewed with most at the low end, which may be partially responsible for the lack of association.

Harter's model of self-worth, one that includes James' as well as Cooley's perspectives, served as a framework for this research. The inclusion of weight stigma consciousness afforded the conduit to include Cooley's theoretical notion of the "looking glass self" as he envisioned it, one that is continually negotiated through relationships with others, an aspect of Harter's model that is not typically included. Recognizing that we were unable to implement Harter's perceived importance for an attractive body discrepancy score for perceived physical appearance, our results suggest that weight stigma consciousness, how one believes others perceive them and subsequently treat them due to their weight, had a greater influence on social physique anxiety than did perceived physical appearance. Weight stigma consciousness also had stronger indirect effects on physical activity and disordered eating than perceived physical appearance. The perceived social support, weight stigma consciousness, has more impact on eating behaviors and physical activity levels than how individuals perceive their own physical appearance.

Our findings confirm the work of Vartanian and Shaprow (2006) who found that the more encounters with weight bias a person experienced, the higher were their levels of exercise avoidance. Moreover, confirming our findings between weight stigma consciousness and eating behaviors, Puhl, Moss-Racusin, and Schwartz's (2007) study of overweight and obese women's levels of weight bias and eating behaviors found that the more weight-biased beliefs a person held, the more frequently they engaged in binge eating behavior. Although weight-biased beliefs and weight stigma consciousness are different constructs they may be related in that the more weight-biased beliefs one holds, the more they will perceive others to hold similar viewpoints, weight stigma consciousness. Our work here strengthens our understanding of these relationships as mediated through social physique anxiety. Weight stigma consciousness does influence peoples' emotions and subsequent behaviors, thus it follows that relevant interventions are warranted. This speaks to the need to assist in the restructuring of perceived weight-biased interactions with others and to aid people in developing effective coping mechanisms for dealing with weight discrimination. Crerand and colleagues (Crerand, Wadden, Foster, Sarwer, Paster, & Berkowitz, 2007) found that educating overweight women who were interested in weight loss to a healthful, rather than dieting, eating approach diminished their negative attitudes towards obesity, which was also related to an improvement in their self-esteem.

Thus, it is possible to improve an individual's internalization of weight bias, but if the socially constructed aspect of self-concept, Cooley's "looking glass self" in the form of weight stigma consciousness, is indeed the strongest influence in social

physique anxiety and subsequent health behaviors, it is equally important to address these biases within society at large. The evidence of weight bias and discrimination within the media (Himes & Thomas, 2007), health professionals (Fabricatore, Wadden, & Foster, 2005; Schwartz, O'Neal, Brownell, Blair, Billington, 2003), and the general public (Schwartz, Vartanian, Nosek, & Brownell, 2006) are well documented. Researchers (Carr & Friedman, 2005; Link & Phelan, 2001) have made the call to recognize that weight discrimination is a social process and have recommended that we turn our focus from the individual with excess weight to those who practice weight discrimination. In order to fully improve the health behaviors of overweight people, it will be necessary to address social environments through education on the health effects of weight discrimination, training to improve communication skills and strategies for working with this population, and sensitization to the perspectives of people who are overweight.

Future directions beyond this study would be to include a qualitative component to better understand these relationships. Our study was quantitative and cross-sectional from which no causal conclusions can be drawn, but the people that contacted us to share nuances as to how their weight had impacted other aspects of their lives provided us with a personal perspective on our statistical analysis. Additionally, a larger sample size might be more informative as to the precursors' influence on the health behaviors. A larger sample size would also allow us to analyze these relationships by BMI categories. Our sample was 41% overweight and 59% obese; the experiences of a person with a BMI of 28 may be very different from someone with a BMI of 38. A larger set of participants would also provide us with an

opportunity to see if differences existed between socio-economic groups. Our group was relatively affluent which, according to the literature, may actually increase a sense of weight discrimination as there are fewer overweight people in at that SES level (Miller & Downey, 1999). It is also assumed that people of higher socio-economic status have more resources which would allow them to consume healthier foods and access exercise facilities and trainers. Thus, if they are overweight or obese, they become more "libel" and responsible for their weight status.

Increasing the diversity of the sample in terms of gender and ethnicity would elucidate relationships that may be different between groups. Within our sample, approximately one-fourth was male. This is not completely surprising given the topic of the research. These percentages are comparable to the National Weight Loss Registry (2007), a database of participants who have lost at least 30 pounds and maintained that loss for at least a year, whose participant constitution is 20% male. Future research directions could include an examination of these relationships with males and females separately to determine differences, if any, between the factors and the mediating influences. Previous research has provided ample support for gender differences in perceived physical appearance, social physique anxiety, and independently, experiences of weight-related discrimination. This study has unmistakably linked these three constructs and their relationships to health behaviors, opening an avenue that is ripe for gender-specific inquiry. A broader exploration of these relationships by race and ethnicity would be useful as the literature has demonstrated various physical ideals across such groups (Evans & McConnell, 2003; Hebl, King, & Lin, 2004; Miller, Gleaves, Hirsch, Green, Snow, & Corbett, 2000).

Although weight discrimination has been experienced by both Caucasian and African-American adolescent girls (Neumark-Sztainer, Story, & Faibisch, 1998) there remains conflicting results as to whether or not race differences exist in the experience of weight bias (Carr & Friedman, 2005).

Furthermore, use of other factors could bring about informative findings and relationships to enhance understanding of self-related constructs and health behaviors. Puhl and colleagues (Puhl, Moss-Racusin, & Schwartz, 2007) recently employed a variation of the Myers and Rosen's Stigmatizing Situations Inventory (1999) to explore the concept of weight stigma and eating behaviors. This measure quantifies stigmatizing experiences rather than inquiring directly about a person's perceptions of weight-related discrimination. Implicit attitude testing has also been extensively used by the Rudd Institute in their research into the impact of weight discrimination. Another appropriate aspect to investigate with this model would be depression as an affect dimension. There is literature that identifies a relationship between depression and obesity (Roberts, Deleger, Strawbridge, & Kaplan, 2003), although, just as with race and ethnicity, there have been equivocal findings into these relationships (Palinkas, Wingard, Barrett-Connor, 1996; Ross, 1994). DeJong (1980, 1993) has demonstrated that the perceived causality and control of obesity impacted the evaluation of the overweight person. When people were told that a medical condition was responsible for the overweight condition, the overweight target was evaluated more positively than when the condition could not be attributed to health status. Investigation into other appropriate precursors to perceived physical appearance and weight stigma consciousness would be warranted, i.e. body shape, body

dissatisfaction, age of onset of obesity, and ones' attributions for weight discriminating behavior.

Clearly, there is much to learn and understand as we work toward improving the health behaviors and status of overweight people. We believe the inspection of weight stigma consciousness has taken us one step further toward this goal. Although this was a quantitative study, approximately 20 people contacted us to tell us about their experiences with weight stigma and self-worth. A woman, who inquired about participating in the study and did not qualify at 5' 8" and 160 pounds, shared with us, "Three years ago I was 376 pounds. It has been an amazing journey. I am grateful for my new active life! Good luck with your research." On a different note, one woman wrote that she was amazed that anyone would be surprised that these relationships existed. She continued, "It's (being overweight) kept me away from exercising in public and sometimes even in private all of my life." A 45 year-old woman who had always been thin until she had her children said she felt invisible and unattractive as a result of her excess weight. One man relayed a conversation he had recently with a friend who recalled a 'fat kid' with whom they had gone to high school. Upon further discussion, the man realized his friend was unknowingly referring to him as an adolescent. He wrote to us, "All my life I have had issues with weight and I know how they tie to other aspects of life. The work you are doing is important." We are encouraged by the insightfulness and compassion of researchers who study the psychological aspects of overweight and obesity and by the comments of some of our participants who took the time to write, to cheer us on, and to share their stories of struggles and triumphs in a very personal part of their lives.

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Footnote

1. Although it was our intention to create a discrepancy score for perceived physical appearance (BODY) using BODYIMP, only 65% of participants rated BODYIMP high enough to have a score calculated. Therefore, we used BODY without the importance factor incorporated.

Table 1

Descriptive Statistics for all Variables (N = 215)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. WSC	32.78 (.77)										
2. BODY	-.39**	1.76 (.05)									
3. PSW	-.45**	.99**	1.95 (.05)								
4. SPA	.73**	-.56**	-.61	42.00 (.77)							
5. PA	-.19**	.13	.14*	-.21**	46.00 (44)						
6. EAT	.41**	-.31**	-.31**	.59**	.00	7.9 (4.15)					
7. ESS	-.12	.15*	.21**	-.28**	.23**	.02	—				
8. Gender	.37**	-.36**	-.30**	.48**	-.11	.41**	.00	—			
9. PWS	.28**	-.35**	-.32**	.38**	-.13	.25**	-.19**	.27**	1.39 (.66)		
10. BMI	.37**	-.20**	-.23**	.30**	-.16*	.11	-.18**	.20**	.48**	32.9 (7)	
11. Age	-.11	.04	.12	-.24**	-.07	-.04	.18**	-.08	-.05	-.09	43 (13)

Note: Mean values and standard deviations are on the diagonal, correlation values below diagonal. Weight stigma consciousness (WSC), perceived body appearance (BODY), physical self-worth (PSW), and social physique anxiety (SPA), physical activity (PA), eating disordered behavior (EAT), exercise self-schema (ESS), perceived weight status (PWS), body mass index (BMI). Mean values and standard deviations did not apply for ESS or Gender, thus a dash acts as a placeholder on the table.

*p < .05, **p < .01 (2-tailed).

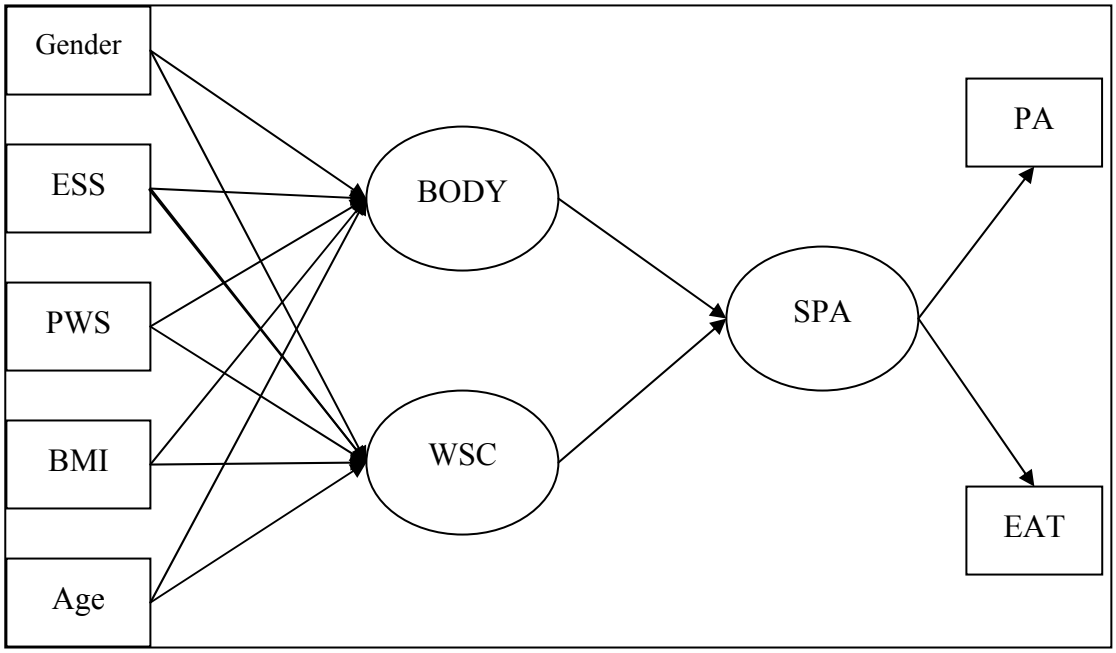
Table 2

Fit Indices for Measurement Model, SPA Mediated Model, and Alternative Model

Indices	Measurement Model	SPA Mediated Model	Alternative Model
Chi-square (*df*)	539.57* (293)	843.699* (473)	841.220* (469)
Normed Chi-sq	1.84	1.77	1.79
CFI	.93	.90	.89
TLI	.92	.89	.88
RMSEA	.06	.06	.06

*p < .000; Comparative Fit Index (CFI), Tucker-Lewis Fit Index (TLI), Root Mean Square Error of Approximation (RMSEA).

Figure 1. The two competing models: SPA mediated model with gender, exercise self-schema (ESS), perceived weight status (PWS), BMI, and age acting as predictors in the model while estimating effects of perceived body appearance (BODY) and weight stigma consciousness (WSC) on social physique anxiety (SPA), physical activity (PA) and disordered eating (EAT) and the Alternative model, nested in the SPA mediated model, with the addition of direct paths from BODY and WSC to PA and EAT, indicated with bold lines.


Gender
ESS
PWS
BMI
Age
BODY
WSC
SPA
PA
EAT

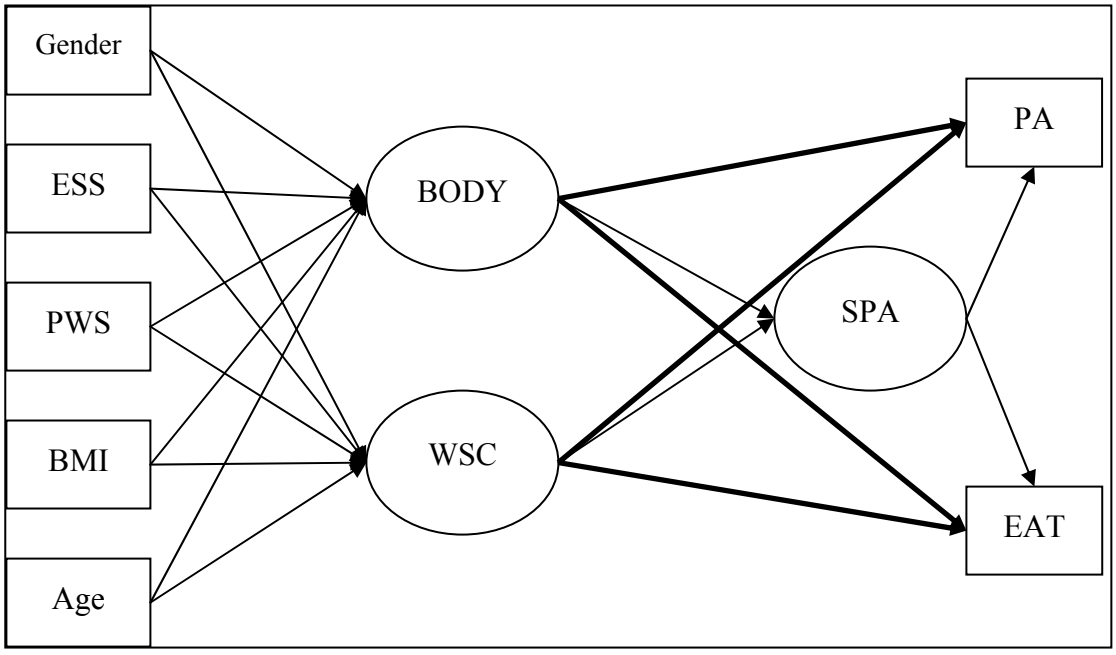
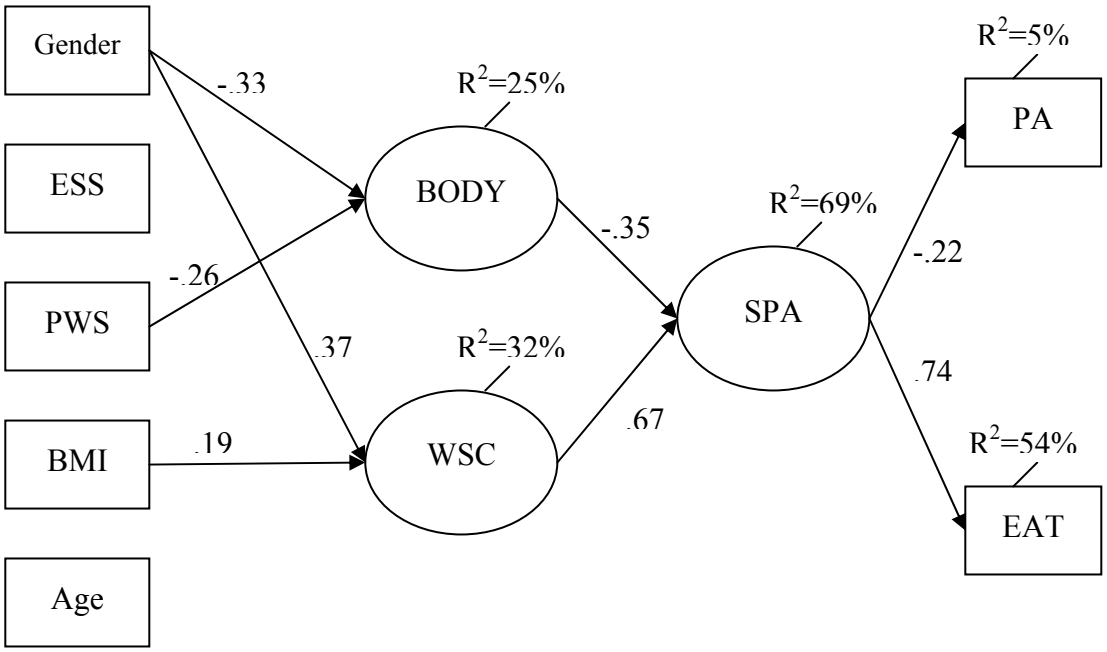

Gender
ESS
PWS
BMI
Age
BODY
WSC
SPA
PA
EAT

Figure 2. SPA mediated model with gender, exercise self-schema (ESS), perceived weight status (PWS), BMI, and age acting as predictors in the model while estimating effects of perceived body attractiveness (BODY) and weight stigma consciousness (WSC) on social physique anxiety (SPA), physical activity (PA) and disordered eating (EAT). Only significant paths are indicated.


Gender
ESS
PWS
BMI
Age
-.33
-.26
.37
.19
BODY
WSC
R2=25%
R2=32%
-.35
.67
SPA
R2=69%
-.22
.74
PA
EAT
R2=5%
R2=54%

Appendix A

Recruitment Flyer

Research Participants Wanted

If you are 18 years of age or older you may be eligible to participate in an Oregon State University research project that explores peoples' self-concepts and health behaviors. Just take an online survey. You may also win a $50 Fred Meyer gift certificate: A 1 in 50 chance to win!

Please contact Rebecca Concepcion: 541-737-9848 or concepcr@onid.orst.edu

Appendix B

Debriefing Document

Thank you again for your participation in this research project. Here are a few important closing thoughts for you to consider regarding body weight and its relationship to health, most importantly that a person can be overweight and still healthy.

There is research that shows the health risks once associated with being overweight may instead be attributable to yo-yo dieting. A person's heredity, physiology, and dieting history all contribute their body weight, not just calories consumed and physical activity levels which are often all we hear about. Research also suggests that maintaining a high, but stable weight, and focusing on your physical activity rather than your weight may be healthier than on and off again dieting. Also, some health conditions related to being overweight may improve with only a modest weight loss. Exercise without weight loss can also improve certain health factors. Keeping physically active is one way to maintain health at every size!

Websites of Interest:

• Largely Positive is an organization that promotes health and self-esteem for people of all shapes and sizes. http://www.largelypositive.com/

• National Association to Advance Fat Acceptance, NAAFA, is a non-profit human rights organization dedicated to improving the quality of life for fat people. http://www.naafa.org/

• The Partnership for Healthy Weight Management is a coalition of representatives from science to the health care professions whose mission is to promote sound guidance on strategies for achieving and maintaining a healthy weight. http://www.consumer.gov/weightloss/

If you have any questions about the research at any time, please call Rebecca Concepcion at 541-737-9848 or email her at concepcr@onid.orst.edu. If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-4933 or by email at IRB@oregonstate.edu

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National Institutes of Diabetes and Digestive and Kidney Diseases http://win.niddk.nih.gov/publications/health_risks.htm#lowerhr

Appendix C

Weight Stigma Consciousness Questionnaire

Directions: Please indicate the extent to which you **agree** with each statement by clicking the number associated with your response.

1. Stereotypes about overweight people have not affected me personally. (R)

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

2. I never worry that my behaviors will be viewed as stereotypical of overweight people. (R)

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

3. When interacting with average weight people, I feel like they interpret all my behaviors in terms of the fact that I am overweight.

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

4. Most average weight people do not judge overweight people on the basis of their weight. (R)

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

5. My being overweight does not influence how average weight individuals act with me. (R)

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

6. I almost never think about the fact that I am overweight when I interact with average weight people. (R)

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

7. My being overweight does not influence how people act with me. (R)

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

8. Most average weight people have a lot more anti-fat thoughts than they actually express.

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

9. I often think that average weight people are unfairly accused of having anti-fat attitudes. (R)

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

10. Most average weight people have a problem with viewing overweight people as equals.

0	1	2	3	4	5	6
disagree strongly			neither agree nor disagree			agree strongly

Appendix D

Perceived Body Attractiveness Scale

WHAT AM I LIKE?

These are statements that allow people to describe themselves.
There are no right or wrong answers since people differ a lot.

For each number, decide which **one** of the two statements best describes you and click its button.

Then, click the button to indicate if it is just **"Sort of True"** or **"Really True"** FOR YOU.

EXAMPLE

Really True for Me	**Sort of True for Me**		**Sort of True for Me**	**Really True for Me**
	Some people are very competitive	BUT	Others are not quite so competitive	

	Really True for Me	**Sort of True for Me**		**Sort of True for Me**	**Really True for Me**
1.	(R)	Some people feel that they have an attractive body	BUT	Others feel that compared to most, their body is not quite so attractive.	
2.		Some people feel that they have difficulty maintaining an attractive body.	BUT	Others feel that they are easily able to keep their bodies looking attractive.	
3.		Some people feel embarrassed by their bodies when it comes to wearing few clothes.	BUT	Others do not feel embarrassed by their bodies when it comes to wearing few clothes.	

Really True for Me	Sort of True for Me			Sort of True for Me	Really True for Me
4. (R)		Some people feel that they are often admired because of their physique or figure is considered attractive.	BUT	Others rarely feel that they receive admiration for the way their body looks.	
5.		Some people feel that compared to most, their bodies do not look in the best shape.	BUT	Others feel that compared to most their bodies always look in excellent shape.	
6. (R)		Some people are extremely confident about the appearance of their body.	BUT	Others are a little self-conscious about the appearance of their bodies.	
7. (R)		Some people believe that having an attractive physique or figure is vitally important to them.	BUT	Others believe that having an attractive physique or figure is not all that important in their lives.	
8.		Some people do not feel it is so important for them to spend a lot of time and effort maintaining an attractive body.	BUT	Others think it is vitally important for them to spend time and effort maintaining an attractive body.	

Appendix E

Physical Self-Worth Questionnaire

WHAT AM I LIKE?

These are statements that allow people to describe themselves.
There are no right or wrong answers since people differ a lot.

For each number, decide which **one** of the two statements best describes you and click its button.

Then, click the button to indicate if it is just **"Sort of True"** or **"Really True"** FOR YOU.

EXAMPLE

Really True for Me	**Sort of True for Me**			**Sort of True for Me**	**Really True for Me**
	Some people are very competitive	BUT	Others are not quite so competitive		

	Really True for Me	**Sort of True for Me**			**Sort of True for Me**	**Really True for Me**
1.	(R)	Some people feel extremely proud of who they are and what they can do physically	BUT	Others are sometimes not quite so proud of who they are physically		
2.		Some people are sometimes not so happy with the way they are or what they can do physically	BUT	Others always feel happy about the kind of person they are physically		
3.		When it comes to the physical side of themselves, some people do not feel very confident	BUT	Others seem to have a real sense of confidence in the physical side of themselves		

Really True for Me	**Sort of True for Me**			**Sort of True for Me**	**Really True for Me**
4. (R)		Some people always have a really positive feeling about the physical side of themselves	BUT	Others sometimes do not feel positive about the physical side of themselves	
5.		Some people wish that they could have more respect for their physical selves	BUT	Others always have great respect their physical selves	
6. (R)		Some people feel extremely satisfied with the kind of person they are physically	BUT	Others sometimes feel a little dissatisfied with their physical selves	

Appendix F

Social Physique Anxiety Scale

Directions: Using the five point scale, indicate the degree to which the statement is characteristic or true of you

1. I am comfortable with the appearance of my physique/figure. (R)

1	2	3	4	5
Not at All	Slightly	Moderately	Very	Extremely

2. I would worry about wearing clothes that might make me look too thin or overweight.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

3. I wish I wasn't so uptight about my physique/figure.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

4. There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

5. When I look in the mirror I feel good about my physique/figure. (R)

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

6. Unattractive features of my physique/figure make me nervous in certain social settings.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

7. In the presence of others, I feel apprehensive about my physique/figure.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

8. I am comfortable with how fit my body appears to others. (R)

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

9. It would make me uncomfortable to know others were evaluating my physique/figure.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

10. When it comes to displaying my physique/figure to others, I am a shy person.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

11. I usually feel relaxed when it is obvious that others are looking at my physique/figure. (R)

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

12. When in a bathing suit, I often feel nervous about the shape of my body.

1	2	3	4	5
Not at all	Slightly	Moderately	Very	Extremely

Appendix G

Godin Leisure-Time Exercise Questionnaire

Leisure-Time Exercise Questionnaire

Considering a **7-Day period** (week), how many times on the average do you do the following kinds of activity for **more than 15 minutes** during your free time (not work related activity)? Only count sessions of physical activity that last at more than 15 minutes. Regardless of how long each session lasts, it will only be counted as one session.

"**PHYSICAL ACTIVITY**" is any structured physical activity (running, walking, sports, exercise session) OR unstructured physical activity (garden or yard work, heavy house cleaning, vigorous play with pet or children, moving boxes). To be counted on this form, **each session must last over 15 minutes.**

EXAMPLE:

- **If you ran three times this past week for 45 minutes each time, you would count this as 3 sessions of strenuous physical activity.**
- **If you did yard work and gardening for 3 hours on Sunday, you would count this as 1 session of moderate physical activity.**

With this example, your responses on this form would look like this:
Strenuous = 3 times per week Moderate = 1 times per week Mild = 0

Considering a **7-Day period** (week), how many times on the average do you do the following kinds of activity for **more than 15 minutes** during your free time? Write on each line the appropriate number.

Times per Week

A. **STRENUOUS PHYSICAL ACTIVITY (HEART BEATS RAPIDLY)** _____
(e.g., running, jogging, hockey, football, soccer, basketball, cross country skiing, judo, roller skating, vigorous swimming, heavy house cleaning, etc.)

B. **MODERATE PHYSICAL ACTIVITY (NOT EXHAUSTING)** _____
(e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing, raking leaves, yoga, etc.)

C. **MILD PHYSICAL ACTIVITY (MINIMAL EFFORT)** _____
(e.g., archery, fishing from a river bank, bowling, horseshoes, golf, snow-mobiling, easy walking, etc.)

Appendix H

Eating Disorders Examination Questionnaire

On how many days out of the past 28 days…

1…Have you been consciously trying to restrict the amount of food you eat to influence your shape or weight? _____ days

2… Have you gone for long periods of time (9 hours or more) without eating anything in order to influence your shape or weight? _____ days

3… Have you attempted to avoid eating any foods which you like in order to influence your shape or weight? _____ days

4… Have you attempted to follow definite rules regarding your eating in order to influence your shape or weight; for example, a calorie limit, a set amount of food, or rules about what or when you should eat? _____ days

5…Has thinking about food or its calorie content interfered significantly with your ability to concentrate on things you are interested in; for example, read, watch TV, or follow a conversation? _____ days

6…Have you had a definite fear that you might not be able to either resist eating or stop eating? _____ days

7…Have you experienced a sense of loss of control over eating? _____ days

8…Have you had any episodes of binge-eating? _____ days

9…Have you eaten in secret? (Do not count binges) _____ days

10…Have you had a definite desire for your stomach to be flat? _____ days

11…Have you had a definite desire for your stomach to feel empty? _____ days

12…Has thinking about shape or weight interfered with your ability to concentrate on things you are interested in; for example, read watch TV, or follow a conversation? _____ days

13…Have you had a definite fear that you might gain weight or become fat?

_____ days

14…Have you felt fat? _____ days

15…Have you had a strong desire to lose weight? _____ days

16…On what proportion of times that you have eaten have you felt guilty because of your shape or weight? (Do not count binges)

0 – None of the times
1 – A few of the times
2 – Less than half the times
3 – Half the times
4 – More than half the times
5 – Most of the time
6 – Every time

17…Have there been times when you have eaten what other people would regard as an unusually large amount of food? 0 – No 1 – Yes

18…How many such episodes have you had over the past four weeks?

_____ episodes

19…During how many of these episodes of overeating did you have a sense of having lost control? _____ episodes

20…Have you had other episodes of eating in which you have a sense had a sense of having lost control but not have eaten an unusually large amount of food?

0 – No 1 – Yes

21…How many such episodes have you had over the past four weeks? _____ episodes

22…Over the past four weeks have you made yourself sick (vomit) as a means of controlling your shape or weight, or to counteract the effects of eating?

0 – No 1 – Yes

23…On how many days out of the last 28 have you done this? _____ days

24…Have you taken laxatives as a means of controlling your shape or weight or to counteract the effects of eating? 0 – No 1 – Yes

25…On how many days out of the last 28 have you done this? _____ days

26…Have you taken diuretics (water tablets) as a means of controlling your shape or weight or to counteract the effects of eating? 0 – No 1 – Yes

27…On how many days out of the last 28 have you done this? _____ days

28…Have you vigorously exercised as a means of controlling your shape or weight or to counteract the effects of eating? 0 – No 1 – Yes

29…On how many days out of the last 28 have you done this? _____ days

Over the past four weeks (28 days)…
(Please select a number)

30…Has your weight influence how you think about (judge) yourself as a person?

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

31…Has your shape influenced how you think about (judge) yourself as a person?

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

32…How much would it distress you if you had to weight yourself once a week for the next four weeks?

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

33…How dissatisfied have you felt about your weight?

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

34…How dissatisfied have you felt about your shape?

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

35…How thin have you wanted to be?

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

36…How concerned have you been about other people seeing you eat? (Only select 4, 5, or 6 if you have avoided some occasions)

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

37…How uncomfortable have you felt seeing your body; for example, in the mirror, in shop window reflections, while undressing or taking a bath or shower? (Only select 4, 5, or 6 if you have avoided some occasions)

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

38…How uncomfortable have you felt about others seeing your body; for example, in communal changing rooms, when swimming or wearing tight clothes? (Only select 4, 5, or 6 if you have avoided some occasions)

0	1	2	3	4	5	6
Not at All		Slightly		Moderately		Markedly

EDE-Q Scoring Key

Restraint Subscale: Items 1, 2, 3, 4, 11

Eating Concern Subscale: Items 5, 7, 9, 16

Weight Concern Subscale: Items 33, 15, 32, 12, 30

Shape Concern Subscale: Items 34, 12, 31, 13, 37, 38, 14, 10

Global Score: Take an average of all subscales.

Appendix I

Exercise Self-Schema Questionnaire

Directions: Below are some questions regarding the way you view yourself. Please answer each question honestly. Indicate your answer by clicking the appropriate number on the scale below the question.

1. I am SOMEONE WHO EXERCISES REGULARLY.

1 2 3 4 5 6 7 8 9 10 11

Does not describe me — Describes me

2. How important is BEING SOMEONE WHO EXERCISES REGULARLY to the image you have of yourself, regardless of whether or not the trait describes you?

1 2 3 4 5 6 7 8 9 10 11

Not at all important — Very important

3. I am SOMEONE WHO KEEPS IN SHAPE.

1 2 3 4 5 6 7 8 9 10 11

Does not describe me — Describes me

4. How important is BEING SOMEONE WHO KEEPS IN SHAPE to the image you have of yourself, regardless of whether or not the trait describes you?

1 2 3 4 5 6 7 8 9 10 11

Not at all important — Very important

5. I am PHYSICALLY ACTIVE.

1	2	3	4	5	6	7	8	9	10	11
Does not describe me										Describes me

6. How important is PHYSICALLY ACTIVE to the image you have of yourself, regardless of whether or not the trait describes you?

1	2	3	4	5	6	7	8	9	10	11
Not at all important										Very important

Appendix J

Demographics Questionnaire

Gender: Male _____ Female _____ Other _____

Age: _____ years

Ethnic Group (choose all that apply)

- ❑ American Indian or Alaska Native
- ❑ Asian
- ❑ Black or African American
- ❑ Hispanic or Latino
- ❑ Native Hawaiian or other Pacific Islander
- ❑ White
- ❑ Other (please specify)
- ❑ Decline to respond

If you are physically active, where do you do this activity? _____

List the types of physical activity you do: _____

Currently, do you currently consider yourself **(select one)**:

Very Underweight	Slightly Underweight	Healthy Weight	Slightly Overweight	Very Overweight

As an adult, what was your **lowest** weight? _____

How long did you **maintain** this weight? _____ Years _____ Months

As an adult, what was your **highest** weight (for women, excluding pregnancy)? _____

How long did you **maintain** this weight? _____

Relationship status: Occupation: _____

- ❑ Single
- ❑ Married or living with partner
- ❑ Separated, widowed, or divorced
- ❑ Other _____

Education level:

- ❑ High School degree
- ❑ Some college
- ❑ Associate's or Bachelor's degree
- ❑ Some Graduate work
- ❑ Graduate degree
- ❑ Professional Certification

Annual Household Income:

- ❑ Less than $2,500
- ❑ $2,501-$5,000
- ❑ $5,001-$7,500
- ❑ $7,501-$10,000
- ❑ $10,001-$12,500
- ❑ $12,501-$14,500
- ❑ $14,501-$16,500
- ❑ $16,501-$18,500
- ❑ $18,501-$20,000
- ❑ $20,001-$40,000
- ❑ $40,001-$60,000
- ❑ $60,001-$80,000
- ❑ $80,001-$100,000
- ❑ $100,001-$120,000
- ❑ $120,001-$140,000
- ❑ $140,001-$160,000
- ❑ $160,001-$180,000
- ❑ $180,001-$200,000
- ❑ $200,001-$250,000
- ❑ $250,001 or more

Current Height _____

Current Weight _____ How long have you **maintained** this weight?_____

Appendix K

Literature Review

Weight Stigma Consciousness and Perceived Physical Appearance:
Key Precursors and Their Relationship to Health Behaviors

The mark of a slave, the sign of an outsider, a deviant, one who does not conform and thus is immoral, one with a 'spoiled identity:' these are ways the world, across time, has defined stigma (Falk, 2001). Originally, the word for the tattoo pricked into the skin of slaves in ancient Greece, stigma lives on through time with the purpose to control outsiders and create a 'collective sense of morality' (p. 18) among insiders (Falk, 2001). This is evidenced in the case of the persecuted girls and women accused of being witches in late 1600s New England, discrimination against women and people of color throughout United States history, and persecution of the European Jews, well before but, most recently during World War II (Falk, 2001).

Although many of these prejudices against stigmatized groups are less obvious in current day-to-day interactions, oppression and discrimination of overweight and obese people continues to be an acceptable prejudice to display (Rothblum, 1992; Stunkard & Sorensen, 1993), often because an individual's weight is considered controllable, thus justifying weight-bias beliefs. These beliefs are based in Protestant ideology, primarily a Caucasian viewpoint (Falk, 2001; Quinn & Crocker, 1999), and secular, psychotherapeutic and psychoanalytic theories of emotional disturbances, fixations on oral stages of life, and character defects in the overweight person (Falk, 2001). Link and Phelan (2001) attribute stigma, here weight stigma, to the implementation of social power to identify "…differentness, the construction of stereotypes, the separation of labeled persons into distinct categories, and the full execution of disapproval, rejection, exclusion, and discrimination" (p. 367). They

emphasize that this can only occur when the in-group has power over the out-group and that the amount of stigma will reflect this power difference.

Weight Stigma Consciousness and Psychological Well-being

Weiner and colleagues found that when participants believed that an overweight person had control over their weight status, participants reacted with anger, attributed negative personality characteristics to the individual, and importantly, felt less inclined to be helpful towards that person (as cited in Puhl & Brownell, 2003). Furthermore, the medical community may have contributed to stigmatization of overweight people through the medicalization of this condition, as has been found with other "controllable" conditions such as fetal alcohol syndrome (Armstrong, 2003). To compound the issue, Kaiser and Miller (2001) demonstrated that there exists a social cost to disclosing ones experience of discrimination; thus, the act of defending oneself against such bias and stigmatizing situations often serves to make the overweight person's social condition worse.

Although stigmatization of overweight and obese persons has been viewed as a modern social phenomenon, researchers have noted stigmatization of obesity as early as nine centuries ago when obesity was viewed as the outcome of a moral failing in Asian culture, and in Europe as the result of one of the seven deadly sins, gluttony (Stunkard, LaFleur, & Wadden, 1998). The stigmatization of obese persons is widespread in Western culture; bias and discrimination are practiced by fitness and health care professionals (Chambliss, Finley, & Blair, 2004; Schwartz, O'Neal, Brownell, Blair, & Billington, 2003; Teachman & Brownell, 2001), hiring committees of physical educators (Melville & Cardinal, 1997), children (Kraig & Keel, 2001;

Turnbull, Heaslip, & McLeod, 2000), and obese persons themselves (Quinn & Crocker, 1999; Wang, Brownell, & Wadden, 2004). Stigmatization of overweight people is so profound that it generalizes to people that are associated with an overweight person (Heble & Mannix, 2003).

Not surprisingly, people who experience negative evaluations by others in such a broad spectrum of their lives experience psychological distress. The most commonly cited stigmatizing situations reported by obese patients were comments from children such as "You're fat," negative assumptions others make about them, and the physical constraints of literally "fitting in" as in fitting into chairs in public places or finding clothes that fit (Myers & Rosen, 1999). Myers and Rosen (1999) found that the more stigmatization people were exposed to, the lower their self-esteem and physical self-worth. Additionally, people who weighed more reported greater numbers of stigmatizing experiences than people who weighed less. In contrast, McLean and Moon (as cited in DeJong & Kleck, 1986) found a positive correlation between males' overweight status and earning power and attributed it to the view that larger physiques for males indicates strength, power, and capability which would be viewed positively in the workplace.

Researchers further examine mental well-being in obese people with the Obesity-related Problems Scale (Karlsson, Taft, Sjörström, Torgerson, & Sullivan, 2003). The more obesity-related problems reported by participants, the worse overall mood, anxiety, and depression they experienced. Pinel (1999) originally developed and validated the Stigma Consciousness Questionnaire (SCQ) to examine if people will expect to be stereotyped and thus discriminated against as a result of their group

membership, a form of self-consciousness. She first investigated this construct with women when they considered their interactions with men, and were asked to evaluate whether or not they believed men would demonstrate bias towards them due to their gender. Pinel (2002) also tested and validated her scale with members of other stigmatized groups, to confirm that the stigma consciousness construct would apply to anyone who is a member of a group accustomed to being judged or discriminated on the basis of their group membership. When compared to those low in stigma consciousness, people high in stigma consciousness tended to recall more specific incidents of discriminating events, chose not to challenge others about stereotypical views of their group, and acted negatively towards members of in-groups (Brown & Pinel, 2003; Pinel, 2002).

Unfortunately, weight bias is held by people in all weight categories, but more strongly by thinner people (Schwartz, Vartanian, Nosek, & Brownell, 2006). In a sample of 4283 people with a wide range of body weights, researchers explored implicit and explicit anti-fat attitudes and the trade-offs people would be willing to make rather than be obese. Implicit attitudes were tested by using Implicit Association Test whereby response latencies determine strength of association between two concepts and two or more attributes. Respondents categorize concepts and attributes more quickly when they are believed to associate more vigorously. Explicit attitudes were determined by asking participants to rate, using a five point scale, their attitudes about thin versus fat people on three different items. They found that explicit anti-fat bias was lower than implicit anti-fat bias for all weight groups; true even when they controlled for suspected moderators of gender, age, number of overweight friends and

family members, perceptions of the experience of being obese, and their personal weight satisfaction. The trade-offs participants were willing to make rather than being obese included giving up one year of life (46%), giving up 10 years of life (15%), being divorced (30%), being unable to have children (25%), being severely depressed (15%), or having an anorexic child (10%). Personal trade-offs that were less popular included loosing a limb (5%) and being blind (4%). Again, people with lower BMIs were more willing to make these sacrifices than people with higher BMIs, demonstrating a weaker anti-fat bias in overweight than in thinner participants.

One of the more troubling aspects of weight stigma is that professionals who are engaged with caring for overweight persons and who would be expected to have a better understanding of the complexities of body weight, demonstrate bias against overweight people much like the general population. Schwartz and colleagues (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003) found, through implicit attitude testing, that health professionals supported negative stereotypical views of overweight people. When they examined the characteristics of the participants in the study, those who held less weight-biased views were older, male, had greater body weight themselves, had more positive life views, and seemed to empathize with being overweight.

Exercise science students had much the same anti-fat bias as the health professionals (Chambliss, Finley, & Blair, 2004). More than 240 undergraduate and graduate students took an implicit attitude test and the Antifat Attitudes Test to examine negative beliefs and attitudes towards obese people. White, female students, who grew up in less populated areas, tended to hold stronger biases against overweight

people. Students with greater weight-bias also held stronger beliefs in personal responsibility related to weight, much as what researchers found with their investigation of the Protestant work-ethic belief and weight bias (Falk, 2001; Quinn & Crocker, 1999). These studies shed light on the potential difficulties of obtaining support and assistance from the very people trained and dispatched to help others improve their health and well-being.

Social Physique Anxiety

How people feel about others viewing and evaluating their physiques has been measured with the Social Physique Anxiety Scale (SPAS; Hart, Leary, & Rejeski, 1989). Developed with males and females, researchers have found that heavier women tend to score higher on the SPAS than lighter women. These emotions negatively impact physical activity levels (Eklund, & Crawford, 1994) and are related to disordered eating behavior (Thompson & Chad, 2002). Ebbeck, Watkins, and Levy (2004) found that larger women with lower perceived physical appearance suffered from higher levels of social physique anxiety and that this ultimately had a negative impact on eating disordered behavior, however physical activity behavior did not contribute to the relationships. Other studies of social physique anxiety have shown that women in particular are susceptible to higher levels of social physique anxiety as their BMI increases, yet for males lower levels of exercise participation predicted higher levels of social physique anxiety (Hausenblas & Fallon, 2002; Loland, 2000).

Perceived Physical Appearance and Psychological Well-being

Physically active people feel better about themselves, but also, regular exercisers as compared to inactive people, are perceived by others to be more

physically attractive and healthier. They are also assumed to be more confident, exhibit more personal control, be harder workers, and neater than non-exercisers. When evaluating personality characteristics and physical status of targets who were described as exercisers, non-exercisers, or control (where exercise status was not included in the description of the target) exercisers were rated more favorably on the majority of items than the non-exercisers and were rated more favorably on half of the items when compared to the control target (Martin, Sinden, & Fleming, 2000). When Martin and Leary (2006) further examined this relationship adding the context of weight they found that overweight exercisers were viewed as more attractive than overweight and average weight nonexercisers. Exercise behavior, without the influence of weight status, influenced perceptions about a person's personality confirming Martin, Sinden, and Fleming's (2000) earlier findings that exercisers were viewed as possessing a more positive personality (Martin & Leary, 2006).

Precursors to Weight Stigma and Perceived Physical Appearance

Four precursors to weight stigma and perceived physical appearance are considered here. They include exercise self-schema, perceived weight status, gender, and BMI. Self-concept theorists have long held that the perceptions held by others is a factor in the forming of ones self-concept (Cooley, 1902; Harter, 1999). Researchers in sport and exercise psychology have examined exerciser self-schema (Kendizierski, 1988) and its influence on a variety of psychological variables and physical activity levels. Estabrooks and Corneya (1997) determined that undergraduate students with higher levels of exercise-schema tended to exercise more and considered exercising more frequently than those who did not see themselves as exercisers. Kendzierski,

Furr, and Schiavoni (1998) found correlations between physical activity identity and the perceived importance of and perceived ability to perform an activity, which they theoretically linked to intrinsic motivation and commitment to physical activity. Considering the psychological benefits of physical activity (Hays, 1999) and the literature on self-presentation, overweight people who view themselves as exercisers may view their physical selves more positively and perceive less weight stigma than those without an exerciser self-schema.

Historically having been overweight can be a negative and stigmatizing experience that one carries, with the psychological effects of weight-related discrimination after weight loss (Annis, Cash, & Hrabosky, 2004). Called the phenomena of "phantom fat," researchers found that of 165 women, those who had been at least 10 pounds overweight for a minimum of six months at some point in their lives had lower levels of social self-esteem and poorer life satisfaction than women who had never been overweight. For these women, the stigmatization they experienced as overweight children impacted their current level of self-esteem (Annis, Cash, & Hrabosky, 2004) as they still perceive themselves as overweight. Miller and Downey's (1999) meta-analysis of over 90 effect sizes found that perceived weight status was more significantly correlated with self-esteem than true body weight.

Although not all researchers have found gender differences in participants' weight stigma experiences and coping mechanisms (Myers and Rosen, 1999), women are held to much higher societal norms for appearance than are men and as a result tend to experience more body image disturbances (Cash & Roy, 1999; Miller & Downey, 1999; Schwartz, & Brownell, 2004). They also tend to suffer from higher

levels of social physique anxiety (Eklund, & Crawford, 1994) and lower levels of physical self-worth and self-esteem (Miller & Downey, 1999).

Heavier people experience more stigmatizing events due to their weight (Myers and Rosen, 1999) and thus have a more negative self-concept. Werrij, Mulkens, Hospers, and Jansen (2006) also found BMI related to poor self-esteem, depression and eating disordered behavior.

The breadth of impact from weight discrimination is nearly beyond comprehension although, Schwartz and Brownell (2004) are quick to point out that not all overweight people suffer psychosocially as a result of societal views of acceptable body weight. They recommend further research on the relationship of predictor variables, areas that might provide psychosocial protection, and ways to improve our understanding of how the physical self is related to health of people. The hope for societal change in weight stigma exists with the knowledge that stigma is a product of time, place, culture, and understanding (Falk, 2001). Researchers have had success with developing social consensus of more positive views of obesity by educating others about the uncontrollable aspects of obesity (Puhl & Brownell, 2003) and it is possible, just as many stigmas have passed or receded, that so to will the stigma associated with the size of our bodies and the space they utilize.

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