ABSTRACT

Title of Document: BODY IMAGE AND SOCIAL ANXIETY: INTEGRATION, COMPARISON, AND EXTENSION OF BIOECOLOGICAL MODELS

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Women entering their first year of college are at risk of developing both pathological body image and social anxiety. The bioecological framework of human development (Bronfenbrenner, 1977) was used to guide the selection and synthesis of three relevant models linking the following outcomes to various predictors relevant to first-year-to-college women: social physique anxiety as a subcomponent of body image concerns, and fear of negative evaluation as a subcomponent of social anxiety. While several differences were found between Asian, Black, and White racial groups, the new bioecological model fit well across all racial groups, explaining between 52% and 57% of the variance in social physique anxiety, and from 40% and 47% of the variance in fear of negative evaluation. For all racial groups, social physique anxiety mediated the relation between self-esteem and fear of negative evaluation. Self-esteem was not supported as a moderator of the relation between body mass index and social physique anxiety. Results suggest the importance of assessing social physique anxiety among college women, as well as studying the bioecological model longitudinally. Further results and implications are discussed for theory, research, and practice.

BODY IMAGE AND SOCIAL ANXIETY: INTEGRATION, COMPARISON, AND EXTENSION OF BIOECOLOGICAL MODELS

by

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TABLE OF CONTENTS

List of Tables

List of Figures

CHAPTER I

Introduction

College students experience significant life changes, in family, friendship, academic, and career domains when they transition into higher education (Hussey & Smith, 2010). The ability to negotiate and cope emotionally with these changes predicts one's success in social and academic realms and subsequently affects one's engagement in and persistence in college (Hussey & Smith, 2010; Kerr, Johnson, Gans, & Krumrine, 2004), while maladaptive coping patterns become barriers to social adjustment (Brissette, Scheier, & Carver, 2002) and may persist or increase into adulthood. While both genders experience adjustment issues to a similar degree, there are differences in the types of adjustment issues typically faced by women, as compared with men. Two mental health problems highly prevalent among college women were the focus of the current study: body image concerns defined as social physique anxiety, and social anxiety defined in this study as fear of negative evaluation which is a subcomponent of this type of anxiety. In the current study, several predictors were posited of social physique anxiety and fear of negative evaluation: self-esteem, ethnic identity, and body mass index (BMI).

Body image concerns are more prevalent among women than among men (Vogt, 2010), and up to two-thirds of college women experience some type of body image problem (Cooley, Toray, Valdez, & Tee, 2007). Body image is a particular issue among this population, because negative outcomes of body image concerns in the summer prior to one's first year on campus may persist or increase over the course of one's college career (Cooley, Toray, Valdez, & Tee, 2007). Body image strongly and reliably predicts eating disorders and subthreshold eating concerns, and is significantly associated with a

substantial number of adverse mental health consequences (Friestad & Rise, 2004; Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004; Ohring, Graber, & Brooks-Gunn, 2002). Among college women, social anxiety and body image are moderately correlated, and social anxiety may be one important consequence of body image concerns (Smolak, 2002). Social anxiety is prevalent among college students, with up to 33% of college students suffering from clinical or near-clinical levels of social anxiety (Strahan 2003). Women outnumber men in the diagnosis of social anxiety and may be especially vulnerable to developing social anxiety during their transition to college (Parade, Leerkes, & Blankson, 2010). Social anxiety has a high comorbidity with other mental health disorders, significantly decreases one's quality of life, and has an enduring course that rarely remits without significant mental health treatment (Blanco, Garcia, & Liebowitz, 2004). Both body image concerns and social anxiety are likely to persist and intensify throughout the course of the college careers of young women.

The proposed study used an existing dataset that the current researcher helped design and administer over a two year time period to incoming first-year students at a large, mid-Atlantic, public university. The dataset contained several validated self-report measures which each form a variable of interest in the current study. Each individual was also asked to estimate height and weight so that a body mass index (BMI) could be calculated. The predictor variables include self-esteem and ethnic identity. The outcome variables include a type of social anxiety called fear of negative evaluation, a type of body image concern called social physique anxiety. These variables are described below.

Social anxiety is "a marked and persistent fear of social or performance situations in which embarrassment may occur" (American Psychiatric Association, 2000, p. 450)

and is consistently associated with body image disturbance and eating disorder pathology. Social anxiety involves three components of experience and behavior: distress, discomfort, and anxiety in social situations, purposeful avoidance of social situations, and fear of receiving negative evaluations from others (Watson & Friend, 1969). Fear of negative evaluation is the component of social anxiety most strongly associated with eating disorders and body image concerns (Wonderlich-Tierney & Vander Wal, 2010), and therefore was the first outcome variable of the current study.

Social physique anxiety is a specific aspect of body preoccupation and appearance anxiety, because it assesses the degree to which one's appearance is salient and important and causes worry and concern. It is moderately related to social anxiety, because it occurs when individuals feel anxious about their physical appearances while in social situations and in which individuals fear becoming embarrassed upon the scrutiny of others (Hart, Leary, & Rejeski, 1989). Therefore, social physique anxiety was the other outcome variable for the current study.

The state of the literature on body image and social anxiety is such that there are a large number of theories and empirical studies with their primary focus on correlates of body image and social anxiety, but which do not integrate or compare various findings (Pruzinsky & Cash, 2002). The body image literature also suffers from a lack of theoretical synthesis (Fisher, 1990; Pruzinsky & Cash 2002), despite the arguments of both original and contemporary body image theorists that empirical research should build upon a multifaceted integration of biological, psychological, and sociocultural systems and incorporate both mediation and moderation analyses (Fisher, 1990; Pruzinsky & Cash, 2002). Bronfenbrenner's bioecological framework is therefore well-suited as a

theoretical framework for the current study, as it argues for the inclusion and synthesis of information regarding multiple systems and contexts of the development of various aspects of mental health (Bronfenbrenner, 1977; Bronfenbrenner & Ceci, 1994). Bronfenbrenner's framework provides the basis for synthesizing elements of three specific theoretical models of body image development and it guides the selection of variables pertinent to body image and social anxiety development. For example, the bioecological framework guides the current study's selection of women who are transitioning into college and it can be surmised from the bioecological framework that self-esteem and ethnic identity should be considered as predictors of body image and fear of negative evaluation. Importantly, the Bronfenbrenner framework emphasizes the ubiquitous nature of macrosystemic level influences in development, such as culture, race, and ethnicity, and it was for this reason that three racial groups were included in the current study: Black American women, Asian American women, and White American women.

However, Bronfenbrenner's bioecological framework does not hypothesize the directional relations between the aforementioned variables. Therefore, the current study approached this problem by presenting three specific models of body image development which each posit mediational and moderational relations between the predictor variables and the outcome variables. Although the authors of each of these models do not describe their models as being influenced by Bronfenbrenner's framework, they can be categorized as bioecological models, due to their attention to biological and ecological factors. First, the body objectification model describes the role of appearance-related anxiety as a unique type of body image anxiety that is related to sociocultural influences,

negative affect, and disordered eating (Fredrickson & Roberts, 1997). Second, the dual pathway model of eating pathology adds specific predictions about how BMI and negative affect relate to body image (Stice, 1994; Stice & Agras, 1998). Finally, the multidimensional model further adds to the Bronfenbrenner framework and the above models by positing complex relations between body preoccupation and specific dimensions of negative affect such as self-esteem (Phan & Tylka, 2006; Tylka & Subich, 2004). Bronfenbrenner's overarching framework guided the synthesis of aspects of these models, and guided the current study's focus on race, gender, and cultural influences on body image and social anxiety development.

Therefore, a main purpose of the current study was to propose a bioecological model of social physique anxiety and fear of negative evaluation based on a synthesis of the aforementioned models (see Figure 1). The viability of this proposed model was tested among incoming first-year-to-college women using latent variable path analysis in structural equation modeling. The proposed model is referred to as a developmental model, because its variables theoretically influence one another across time, ultimately explaining one's level of social anxiety and body image upon entry to college. However, the current study assessed each of these variables at the same point in time, and therefore, no causal predictions were made. At this time, researchers in the field of body image (Rogers Wood & Petrie, 2010; Stice, 2002a) are encouraging the pursuit of cross-sectional research to validate such developmental models before attempting longitudinal verification.

Cross-racial comparison of the viability of the aforementioned models is relatively rare, and researchers have highlighted the importance of addressing the roles of

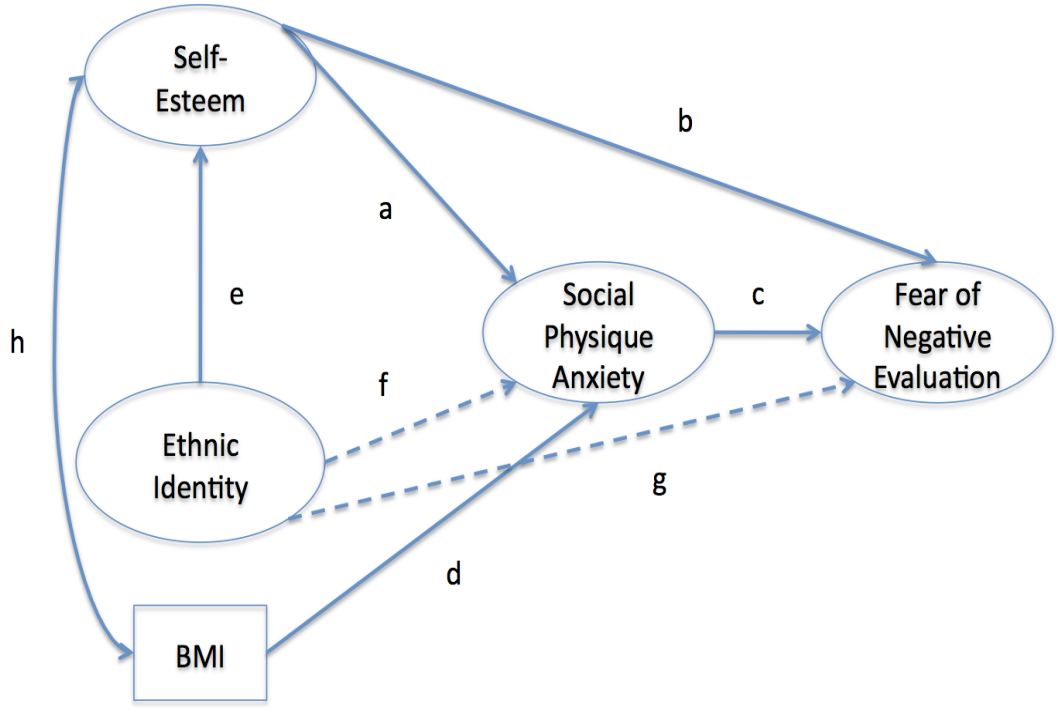
race, ethnicity, and ethnic identity in the development of both body image and fear of negative evaluation (Phan & Tylka, 2006; Root, 1990). Because of this, a second purpose of the current study was to test each of the hypotheses in this study within Black American, Asian American, and White American groups of women. In the case of this new bioecological model, the purpose was to determine whether the model can appropriately describe the mediational paths from predictors to these variables within each racial group, or whether the proposed model needed to be altered slightly or substantially to fit the experiences of each particular racial group.

Also, ethnic identity has been posited as a predictor of body image concerns and social anxiety, but relatively few studies have actually tested the relation between ethnic identity and fear of negative evaluation or body image. Therefore, the third purpose of the current study was to perform an exploratory analysis by adding ethnic identity as a predictor in the proposed bioecological model of fear of negative evaluation and social physique anxiety among incoming first-year-to-college women (see Figure 1). This model was tested within Black American, Asian American, and White American groups of women to determine whether the model could appropriately describe the mediational paths from predictors to these variables within each group, or whether the proposed model needed to be altered slightly or substantially to fit the experiences of each particular racial group.

One of the overarching goals of the current study was to investigate how to better predict social physique anxiety, given that this variable is uncommonly studied among women of color and mediating interrelations of its predictors are infrequently compared across racial groups (Russell, 2002; Russell & Cox, 2003). Because most women

internalize sociocultural pressures for thinness, those with higher BMIs experience greater body image disturbance than do women with lower BMIs (Stice, 1994). This means that social physique anxiety, as a type of body image disturbance, should be positively associated with BMI. However, it is not known whether the pattern of relation between social physique anxiety and BMI is best described by a linear slope or one with one or more inflexion points (e.g. a quadratic or cubic relation), and a thorough literature review reveals no prior tests of this research question. Therefore, the fourth purpose of this study was to test whether the relation between Body Mass Index (BMI) and social physique anxiety was linear. Again, these questions were addressed separately within Black American, Asian American, and White American groups of women.

Figure 1. Bioecological Model with Exploratory Paths from Ethnic Identity, Proposed in the Current Study



Note. Dashed lines signify exploratory paths.

Also consistent with the purpose of better predicting social physique anxiety, the fifth purpose of this study was to investigate whether self-esteem would moderate the relation between BMI and social physique anxiety. Specifically, high self-esteem would reduce the aforementioned positive relation between BMI and body image (Phan & Tylka, 2006). In keeping with the second goal of the study, this moderation hypothesis was also tested within Black American, Asian American, and White American groups of women.

CHAPTER II

Review of the Literature

Upon transitioning to college, students must cope with various changes in their social, family, and academic lives and many must learn how to live a healthy lifestyle away from home. The transition to higher education is a significant one, involving changes in students' daily lives, self-concepts, methods of learning, and social and academic maturity (Hussey & Smith, 2010). Some of these changes may be planned, but other changes may come as surprises to educators, parents, and most importantly, to each student (Hussey & Smith, 2010). These transitions can generate stress and the negotiation of these transitions and their associated emotional consequences are important for the development of students' engagement and persistence in college (Hussey & Smith, 2010; Kerr, et al., 2004). The perceptions that students have of stress during the college transition predict their adjustment in social, academic, and emotional domains (Brissette, Scheier, & Carver, 2002; Kerr, et al., 2004). Furthermore, the process of developing strategies for successful negotiation of college adjustment may add to students' sense of confidence and offer them important practice for navigating other life transitions. Conversely, maladaptive responses to the college transition become barriers to social adjustment (Brissette, et al., 2002) and may persist over time in the form of social anxiety and lowered self-confidence.

Compared with young men, young women who are transitioning into college are at a higher risk for developing problems in several domains, including social anxiety and body image concerns. For instance, while social anxiety is prevalent among all college students, with up to 33% of college students suffering from clinical or near-clinical levels

of social anxiety (Strahan 2003), women outnumber men in the diagnosis of social anxiety and may be particularly vulnerable to developing social anxiety during their transition to college (Parade, Leerkes, & Blankson, 2010). Body image concerns are also more prevalent among women than among men (Striegel-Moore & Franko, 2002). Recent studies indicate that up to two-thirds of college women experience body image concerns, and negative outcomes of body image concerns in the summer prior to one's first year on campus may persist or increase over the course of one's college career (Cooley, et al., 2007). Moreover, among college women, social anxiety and body image are moderately correlated (Smolak, 2002), and such negative affect may be one important consequence of body image concerns (Levine & Smolak, 2002). It is crucial to study social anxiety and body image among this vulnerable population for a variety of reasons. Social anxiety is highly related to other mental health disorders, significantly impacts quality of life, and the course is typically enduring with little to no chance of spontaneous remission (Blanco, et al., 2004). Body image is the strongest and most robust predictor of eating disorders and subthreshold eating concerns, and is associated with adverse mental health consequences such as depression (Friestad & Rise, 2004; Jacobi, et al., 2004; Ohring, Graber, & Brooks-Gunn, 2002). In sum, social anxiety and body image are two salient and related areas of concern for women upon their entry to college life, especially because they are concerns that persist, and often intensify, throughout students' time in college.

The current literature review supports the importance of investigating the five main goals of the current study. First, this study aimed to better predict social physique anxiety by assessing the potential interaction between the two predictors of social

physique anxiety: BMI and self-esteem. Second, a new bioecological model of social anxiety and body image was proposed in order to enhance prediction and understanding of these outcomes as measured among young women entering their first year of college. Third, the variable of ethnic identity was added into the new bioecological model and was assessed for the degree to which it accounted for variance in social physique anxiety and fear of negative evaluation while controlling for variables already present in the model. In an effort to better predict a type of body image called social physique anxiety, the fourth aim of this study was to more closely assess the relation between BMI and social physique anxiety. Finally, because the body image literature was characterized by a focus on the experiences of White women, and a lack of research on women of racial minority groups, particularly Black American and Asian American women, the current study tested the aforementioned research questions and hypotheses with each of these three groups of incoming first-year college women.

The literature review begins with a definition of body image and social anxiety and the prevalence and outcomes of each. Then a description of Bronfenbrenner's bioecological framework and three popular models which follow this framework will be provided. Next is a critical review of these models, their variables, and strengths and limitations on the research for each model. Finally a variable review section presents further theory and empirical evidence tying the variables together into a new integrated bioecological model. The variable review section also relates race and ethnic identity to the aforementioned variables, addresses the potential role of ethnic identity in the new bioecological model, and provides evidence for the hypotheses and research questions specific to the improved prediction of social physique anxiety.

Body Image

Definition

Body image is an important variable for research on college women because the age at which women traditionally enter college coincides with the age at which they often develop body image disturbances severe enough to cause disordered eating (Hudson, Hiripi, Pope, & Kessler, 2007). Furthermore, the stresses of transitions to college can exacerbate the psychological vulnerabilities of these women, and may especially exacerbate body image problems as they enter into living arrangements and contexts of heightened social comparison with their peers. Body image problems have been shown to predispose women to a myriad of mental health issues including disorders along the anxiety spectrum (Polivy, Herman, & Boivin, 2008). In the current section, body image and types of body image are defined, then behavioral and psychological correlates of body image are described.

In the past century, psychological perspectives on body image have paralleled prevailing theoretical trends within psychology. Research on body image began in the early 20th century with studies of the neural mechanisms of body posture and movement coordination, or "body schemas" (Pruzinsky & Cash, 2002). Psychodynamic views then gained popularity through the study of "body image boundaries; assignment of meaning to specific body areas; general body awareness; and distortions in body perception" (Fisher, 1986, p. xi). Since the 1970s, treatments have been strongly influenced by cognitive-behavioral and feminist perspectives and research has focused on these and sociocultural influences on body image and its link with eating disturbances (Pruzinsky & Cash, 2002).

In 1935, psychoanalyst Paul Schilder posited one of the earliest definitions of body image as "the picture of our own body which we form in our own mind" (p. 11). Since that time, the term body image has been conceptualized as a broad term which incorporates multiple subcomponents including one's cognitions, affect, behavior, distortions, and opinions concerning one's whole body, parts of one's body, others' perceptions of one's body, and one's fitness and strength (Wertheim, Paxton, & Blaney, 2009). One of the most commonly studied forms of body image is body dissatisfaction, defined as negative beliefs and evaluations about aspects of one's body such as one's weight, figure, shape, stomach, and hips (Garner, 2002; Stice, 2002b). Body preoccupation shares commonalities with body dissatisfaction, also involving negative beliefs and evaluations about one's weight, figure, and shape (Valutis, Goreczny, Abdullah, Magee, & Wister, 2008). However, it additionally includes the degree to which one's negative attitudes about one's body are salient, important, and concerning to an individual (Mazzeo, 1999).

Behavioral and Psychological Correlates of Body Image

Relation between Body Image and Eating Disorders. Body preoccupation, dissatisfaction, and other forms of body image disturbance are linked with a myriad of behavioral and psychological problems. The study of body image is especially important given the strong link between body image and disordered eating and the rise in the severity and prevalence of disordered eating among young women. In the United States, at least 10 million people suffer from either anorexia or bulimia, with millions more battling binge eating disorder and other forms of disordered eating (Hudson, et al., 2007). Among all psychiatric disorders, anorexia has the highest mortality rate and this rate is 12

times greater than any other cause of death for women between ages 15 and 24 (Polivy, et al., 2008). According to a recent nationally representative survey, the overall incidence of eating disorders is rising, with the incidence of bulimia and binge eating disorder increasing significantly over the past fifty years (Hudson, et al., 2007). Lifetime prevalence is two to three times as high among women as men, and age of onset may begin as early as late childhood but typically occurs between 17 and 21 years of age (Hudson, et al., 2007), which subsequently corresponds to the traditional age of college women and women who are transitioning into college. Body dissatisfaction and preoccupation consistently occur as temporal precursors to eating disorder symptom onset and subthreshold eating behaviors in later adolescence and among college women (Jacobi, et al., 2004; Marmorstein, von Ranson, Iacono, & Succop, 2007; Phan & Tylka, 2006). Over half of college women are dissatisfied with their weight (Rozin, Bauer, & Catanese, 2003), and eating pathology typically persists or increases over the course of their college careers (Cooley, et al., 2007).

Mental Health Outcomes. Chronic concerns with body image including body weight and shape have been associated with a variety of psychological problems. Among women and adolescents, body dissatisfaction has been linked to increased depression, lower life satisfaction, lower psychological well-being, lower self-esteem (Ganem, de Heer, & Morera, 2009), increased anxiety (Dyl, Kittler, Phillips, & Hunt, 2006), and lower sexual satisfaction (Pujols, Meston, & Seal, 2010). Recent reviews of the empirical literature highlight that weight, shape, and appearance concerns are intrinsically tied to these issues (Wertheim, et al., 2009). For example, body image concerns are consistently associated with the development of depressive symptoms and low self-esteem over the

course of adolescence and into young adulthood (Friestad & Rise, 2004; Ohring, et al., 2002), and body dissatisfaction increases risk for suicidality through depressive symptoms (Brausch & Gutierrez, 2009). As noted earlier, body preoccupation has been linked to social anxiety (Smolak, 2002; Hart, Leary, & Rejeski, 1989), but few studies have assessed the relation or possible connections between these two variables.

Social Anxiety

Definition

As noted earlier, social anxiety is prevalent among college students, with up to 33% of college students suffering from clinical or near-clinical levels of social anxiety (Strahan 2003), and it is more prevalent among women than among men (Striegel-Moore & Franko, 2002). Social anxiety is particularly important for study among this population because it is during the college-age years that social anxiety begins to develop and significantly impede the functioning of its sufferers (Blanco, et al., 2004). The current section provides a definition and overview of social anxiety as well as a description of its characteristics and prevalence among college students. Chronic concerns with body weight and shape have been associated with a variety of psychological problems, especially anxiety disorders such as social anxiety. Social anxiety, or "a marked and persistent fear of social or performance situations in which embarrassment may occur" (American Psychiatric Association, 2000, p. 450) is consistently associated with body image disturbance and eating disorder pathology. Social anxiety involves three facets of experience and behavior: distress, discomfort, and anxiety in social situations, purposeful avoidance of social situations, and fear of receiving negative evaluations from others (Watson & Friend, 1969). Social anxiety typically develops in late adolescence, and by

young adulthood, most individuals who will experience pervasive symptoms will exhibit them at that time (Blanco, et al., 2004). It also occurs along a spectrum, with shyness on one end and more severe forms of avoidant personality disorder at the other (Blanco, et al., 2004). Social anxiety disorder has a high comorbidity with other disorders, and the course is enduring with little to no chance of spontaneous remission (Blanco, et al., 2004). Unfortunately, disorders along the social anxiety spectrum are on the rise over past decades, highlighting the need to identify meaningful points of intervention (Blanco, et al., 2004). Social anxiety disorder is under-diagnosed, with only 13-28 percent of those diagnosed seeking treatment. Young adults are more likely to experience social anxiety than are older adults, according to lifetime and recent prevalence rates, and the prevalence of social anxiety disorder has increased significantly in the past four decades among individuals with social, economic, and educational advantage (Heimberg, 2000).

Outcomes of Social Anxiety Among College Students

Social anxiety is a significant problem for college students because it places them at increased risk for alcohol use and abuse, susceptibility to peer pressure (Neighbors et al., 2007) and loneliness among women (Bruch, Kaflowitz, & Pearl, 1988). These individuals are also more likely to experience comorbid psychological and physical problems, difficulty with normative transitions, and increased suicidal ideation and attempts, when compared with their non socially-anxious peers (Cougle, Keough, Riccardi, & Sachs-Ericsson, 2009). Social anxiety affects students of any race, ethnicity, nationality, or sexual orientation (Pachankis & Goldfried, 2006; Purdon, 2001) and is an important factor in the friendship formation and hypothesized to be related to the retention of minority students who are transitioning into college (Parade, Leerkes, &

Blankson, 2010). Individuals with social anxiety are less likely to graduate from college, and social anxiety typically precedes other mood disorders (Blanco, et al., 2004). Given these findings, it is imperative to assess the precursors to social anxiety among racially diverse groups of college students. Experts urge for increased research and understanding of its development (Seedat & Nagata, 2004), but none of the aforementioned studies have assessed body image as a potential precursor to the development of social anxiety.

Few studies have assessed whether college students' perceived appearance significantly predicts their social anxiety and fear of negative evaluation by others. Body dissatisfaction is significantly related to appearance anxiety among individuals with ruminative response styles (Etu & Gray, 2010), and predicts negative expectations of social interactions (Santuzzi, Metzger, & Ruscher, 2006). These negative expectations may contribute to anxiety in social situations and become barriers for the well-being and optimal functioning of adolescents and young adults. Also, fear of negative evaluation, as a specific component of social anxiety, is significantly correlated with eating disorder symptoms in college women (Wonderlich-Tierney & Vander Wal, 2010). In sum, it is well established that body image problems are a strong underlying precursor to eating disorder pathology and a central component of other facets of physical and psychological functioning. According to experts in the field, body image is typically addressed as an important variable simply because it is related to eating pathology. Most theoretical models and empirical research that include a variable of body image identify eating disorder pathology as the sole outcome, rather than additionally including the potential psychological consequences reviewed above. This perspective de-emphasizes the role of body image as itself an important outcome for the general well-being of young women,

therefore hindering our understanding of body image as a crucial precursor to prevalent and serious types of negative affect such as social anxiety. Therefore, an increased research focus on the development of body image is warranted both because of its strong association with eating disorders and because of the need for focused attention to the psychological consequences of poor body image (Pruzinsky & Cash, 2002). For these reasons, the current study addressed the development of both body preoccupation and social anxiety among young women entering college.

How do pathological body image and its associated psychological consequences arise among those most susceptible to their development? As noted earlier, multiple theoretical explanations of body image development have been proposed, each focusing on neurological, biological, familial, cognitive-behavioral, or sociocultural factors. In fact, there are an exceptional number of theories and empirical studies, many of which exist in "not-so-splendid isolation" from each other (Pruzinsky & Cash, 2002, p. 8). Experts on body image and eating disorders have long expressed concern over the lack of theoretical and empirical integration in the field (Fisher, 1990; Pruzinsky & Cash, 2002). Even Schilder, the first researcher to devote volumes of work to body image, argued for a multifaceted integration of biological, psychological, and sociocultural elements (Schilder, 1935). In keeping with the recommendations of original and contemporary experts, the following section presents a comprehensive theory of human development which can incorporate the biological, psychological, and sociocultural correlates and consequences of body image within one framework. A description of this theory and brief review of how the current study variables fit within its systems is presented. Finally,

several models will be presented which use this theory in conceptualizing the relations between the variables in the current study.

Bronfenbrenner's Bioecological Framework

As noted earlier, the purpose of the current study was to test a model of both body image and social anxiety development, given the substantial relations between body image and social anxiety, and the correlates common to each. While the model tested in the current study was theoretically developmental, the current study assessed all variables at one point in time. This follows the recommendations of researchers that cross-sectional research should validate the relations in developmental models of body image before attempting longitudinal verification (Rogers Wood & Petrie, 2010; Stice, 2002a).

Bronfenbrenner's (1977) bioecological framework of human development is a model which incorporates the multiple biological and ecological contexts of human development, and it is one of the most widely used models which account for contextual influences. It has been adapted for use in examining a wide array of psychosocial issues and therefore is adapted here as a basis for guiding the selection of variables pertinent to body image development. In 1977, Urie Bronfenbrenner wrote a landmark article in which he reacted against reductionistic experimental control in contemporary research of the mid-20th century. Influenced by Kurt Lewin's theory of behavior as a function of a person and environment, Bronfenbrenner devised an ecological framework for considering the role of contextual elements within human development. He posited that individuals live and grow within a myriad of nested systems, and these systems affect how individuals perceive and react to life events (Bronfenbrenner, 1979). These include the microsystems, exosystems, macrosystems, and mesosystems. More recently,

Bronfenbrenner and Ceci (1994) introduced new elements to the ecological framework, namely a biophysical and a chronological component.

The strengths of a bioecological perspective lie in its ability to cast a wide net for incorporating multiple variables and contexts related to a particular phenomenon. The bioecological perspective facilitates scientific discovery and exploration and is especially useful for hypothesis-generation. Given the lack of integration of the body image literature, the bioecological framework of human development was chosen as the main framework which was used to identify the variables which most salient for body image development among women entering their first year of college. While the current study did not test all of the systems of this framework, it tested those which have been shown to be most salient to the study of body image development. This review of the bioecological framework provides rationale for the selection of several variables in the current study, as will be described in the later variable review section. The variables of the current study and the systems which they represent are described below, beginning with those most proximal to an individuals' development.

Bronfenbrenner and Ceci (1994) expanded Bronfenbrenner's original model and conceptualized that biophysical influences include intrapsychic traits as well as the original focus on genetic characteristics. Temperament, personality, and physical features can be considered biophysical elements relevant to body image. The eating disorder and body image literature provide specific evidence of the role of genetic predispositions to their development, such as in molecular-genetic studies and twin and family studies (Polivy, et al., 2008). The mechanism of these genetic effects may be the neurotransmitter serotonin, which has been found to be elevated in eating disordered patients (Kaye,

Weltzin, & Hsu, 1993) and is also associated with unique temperamental characteristics such as anxiety (Polivy, et al., 2008). In fact, individuals with eating disorders are more likely than non-disordered counterparts to exhibit significant obsessiveness, anxiety, social anxiety, and negative self-evaluation, even throughout their recovery (Polivy, et al., 2008; Pruzinsky & Cash, 2002). Even ten years after recovery, disorders on the anxiety spectrum remain the most prevalent comorbid concerns (Polivy, et al., 2008). Therefore, fear of negative evaluation, as a subcomponent of social anxiety, was a variable in the current study.

Self-esteem and identity may be linked in their contribution to disruptive body image and eating behaviors. Polivy and colleagues (2008) note that negative self-evaluation is a significant risk factor for developing disordered eating behaviors and argue that such low self-esteem can be a hallmark of broader identity issues. Individuals who are lacking a coherent identity may instead construct an identity around their eating, weight, and shape, thereby creating feelings of control (Polivy & Herman, 2002). Experimental research supports this in that chronic dieters show disordered eating behavior when their identities are under attack (Polivy et al., 2008). Therefore, self-esteem and ethnic identity were investigated in the current study.

The physical elements of one's body, including body shape, body size, and body mass index predispose individuals to body image problems and eating disturbances. Among college women, the size of the discrepancy between one's ideal and one's perceived body shape is positively correlated with the degree of both body dissatisfaction and drive for thinness (Gordon, Castro, Sitnikov, & Holm-Denoma, 2010). Cross-sectional and prospective longitudinal studies indicate that a higher weight to height ratio

(body mass index) is associated with an increased risk for the development of body dissatisfaction among young girls (Paxton, Eisenberg, & Neumark-Sztainer, 2006). While a certain degree of body dissatisfaction may be appropriate and healthy for individuals who are truly overweight or obese, clinicians and researchers alike are concerned that among some individuals, body dissatisfaction can lead to excessive preoccupation, inappropriate dieting, and pathological eating behaviors. In fact, having a high premorbid body mass index during childhood is associated with an increased risk of later development of an eating disorder (Touyz, Polivy, & Hay, 2008). Thus, BMI was one of the variables assessed in the current study.

Macrosystems are the broadest ecological context within which the other systems are embedded. The macrosystem involves social norms, attitudes, and ideologies of cultures and subcultures. Empirical findings on cross-national and gender differences emphasize the importance of macrosystemic influences on body image development. Women who live in cultures and subcultures which emphasize unrealistic and unattainable ideal body types are more likely to feel dissatisfied with their own bodies than women who live in cultures which do not place an emphasis on unrealistic body types. Researchers have posited that body dissatisfaction is particularly prevalent in cultures influenced by western ideas of thinness-as-beauty (Wertheim, et al., 2009). For example, several cross-cultural studies have found that girls from eastern cultures had larger ideal body sizes than girls from western cultures (Rubin, Gluck, Knoll, Lorence, & Geliebter, 2008). Women in countries which have undergone “westernization” or which have adopted thinness as an ideal characteristic are experiencing increasing levels of eating disorder pathology and body dissatisfaction (Nasser, 1994), and one’s exposure to

western ideals of thinness predicts one's dieting (Gunewardene, Huon, & Zheng, 2001). This is also why ethnic identity, or one's exploration and commitment to one's ethnic group, was measured in the current study.

Gender role orientation is significantly related to body dissatisfaction such that among women, the degree of one's appreciation of one's body is negatively correlated with various aspects of feminine gender ideology, such as values of purity and stereotypic images and activities for women (Swami et al., 2010; Swami & Abbasnejad, 2010). When women are exposed to multiple sources of societal messages, the effects of these messages may be more powerful. Environments which involve multiple sociocultural influences and pressures to be thin put young women at an increased risk for body dissatisfaction (Dunkley, Wertheim, & Paxton, 2001). This may be why young women are at special risk for developing body image problems, and consequently why women were the population of interest in the current study.

Bronfenbrenner's emphasis on the chronological elements of development provides an impetus for considering age and life transitions as they relate to body image. The stress of life challenges, transitions, and restructuring of family relations and social networks can exacerbate longstanding psychological vulnerabilities among girls and young women and place them at increased risk for experiencing consequences of poor body image (Smolak & Levine, 1996; Striegel-Moore, 1993). The sharpest increases in eating disorder pathology occur between roughly 18 and 20 years of age (Hudson, et al., 2007). These ages represent a crucial period of identity development, when young adults transition from individuating to exploring and forming unique identities (Collins & Steinberg, 2003).

Identity was briefly mentioned above as an intrapsychic variable which, when vulnerable or under attack, places women at a risk for disordered eating (Polivy et al., 2008). Such developmental transitions are posited to be particularly unique among students who attend college, because of difficulties many students have in adapting to life on a campus and as a student. College brings with it homesickness and challenges to security (Beck, Taylor, & Robbins, 2003), academic stress, leaving family, increased social comparison, shifting peer networks, and financial stress, all of which may potentially affect one's identity development and exacerbate the aforementioned predisposing risk factors for body image and eating problems. Indeed, it is estimated that up to 49% of college women have at least subthreshold eating disturbance (Berg, Frazier, & Sherr, 2009). Recent research highlights the importance of focusing on the struggles young women face when initially arriving to campus during the first year. The "freshman 15" is a well-known term used among college students to describe the amount of weight that freshmen supposedly gain during their first year on campus. Dieting, worries about gaining weight one's first year, and self-esteem at first arrival on campus in September all predict first-year-to-college body image, particularly body preoccupation, and body preoccupation, in turn, predicts first-year disordered eating (Delinsky & Wilson, 2008). Consequently, disordered eating habits increase significantly among first-year college women (Delinsky & Wilson, 2008), with up to 72 percent of all college women eventually engaging in some type of eating problems (Cain, Epler, Steinley, & Sher, 2010). One study conducted at multiple college campuses across the U.S. found that two thirds of college women are dissatisfied with their weight (Rozin, Bauer, & Catanese, 2003), and entry levels of eating pathology typically either persist or increase over the

course of college (Cooley, et al., 2007). It is for these reasons that young women at the precipice of entry into college were an appropriate population to study.

In conclusion, from a bioecological standpoint, we know *that* certain variables are related to body image development, and the bioecological framework has provided an impetus for the further development of models which specify *how* these variables interrelate. Polivy and colleagues (2008) criticize the current literature for ignoring the mediating and moderating roles of predictor variables put forth by contemporary bioecological models. Therefore, the next step entails empirical testing of more specific models of body image and its psychological consequences. The following section introduces models which have their basis in Bronfenbrenner's bioecological framework and which delineate specific directional hypotheses of how BMI, social support, self-esteem, and sociocultural messages interrelate to explain body image development and consequences among late adolescents and young adults. Strengths and limitations of each of these models will be described. At the end of the section on each model, the elements of each model that were integrated into the new bioecological model are delineated.

Specific Bioecological Models of Body Image Development

As noted in the previous section, Bronfenbrenner's bioecological framework contributes several important ideas for the formation of the new bioecological model proposed in the current study. Bronfenbrenner's model provides the basis for guiding the current study in selecting women who were transitioning into college and guides the current study's focus on self-esteem and ethnic identity as predictors of body image and fear of negative evaluation. Importantly, the Bronfenbrenner framework emphasizes the ubiquitous nature of macrosystemic level influences in development, such as culture,

race, and ethnicity. However, it does not hypothesize the directional relations between these variables. Therefore, the current section presents three specific models of body image development which are variations on Bronfenbrenner's bioecological model of human development and which have the specific purpose of positing mediational and moderational paths. Although the current study tested a theoretically developmental model, all variables were assessed at one point in time. Researchers in the field of body image have recently argued that cross-sectional research should validate the relations in such developmental models as measured at one point in time, before making attempts at longitudinal verification (Rogers Wood & Petrie, 2010; Stice, 2002a).

Each of these models attempts to expand and deepen our understanding of the mediating and moderating roles of the correlates of body image and social anxiety mentioned above. First the body objectification model is presented, which elucidates the role of appearance related anxiety as a unique type of body image anxiety that is related to sociocultural influences, negative affect, and disordered eating. Second, the dual pathway model of eating pathology is presented as it adds specific predictions about how BMI and negative affect relate to body dissatisfaction. Finally, the multidimensional model further adds to the Bronfenbrenner framework by positing the complex relations between various dimensions of negative affect such as self-esteem and the development of body preoccupation (see Figure 2).

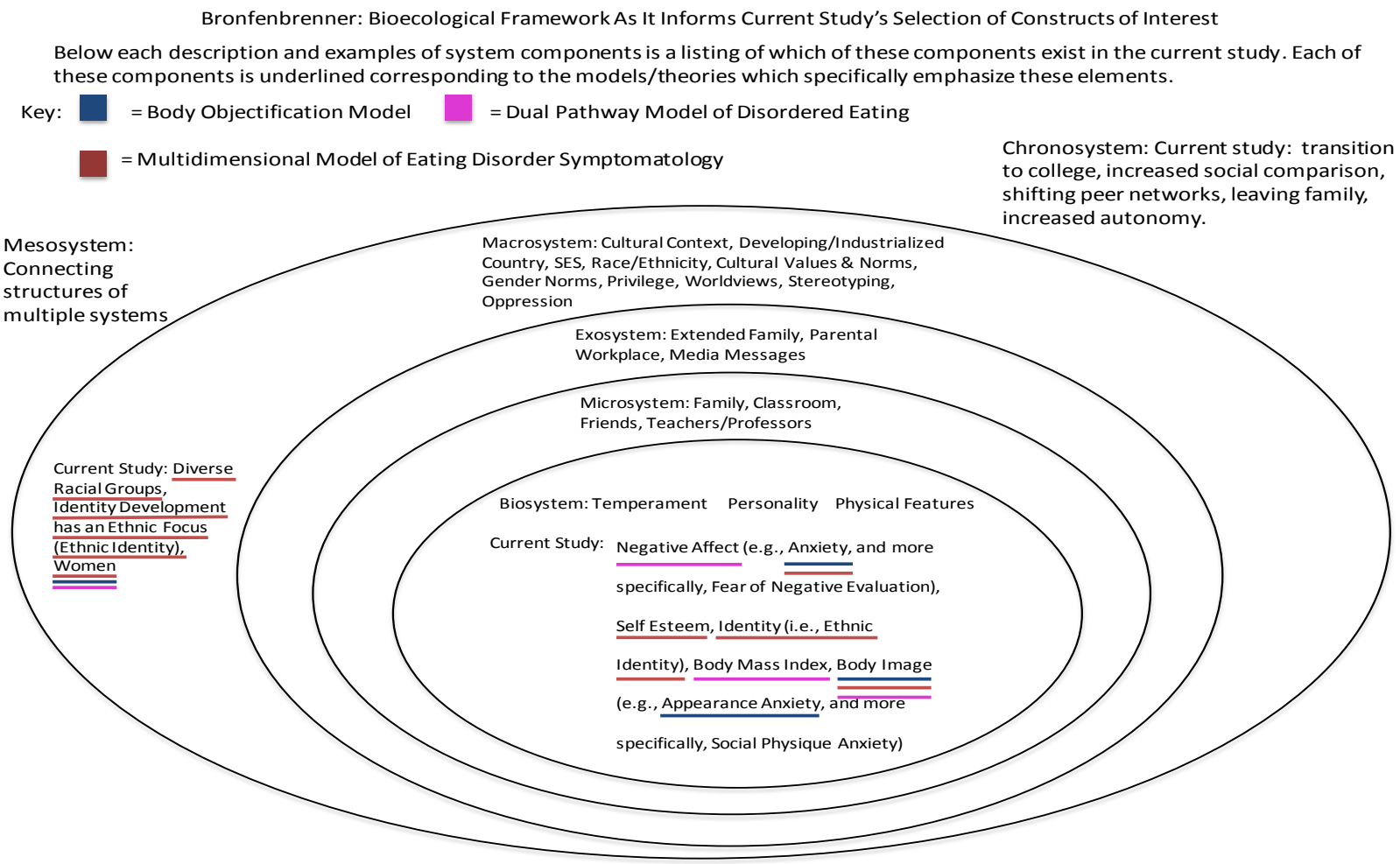
Body Objectification

In 1997, Fredrickson and Roberts described how sociocultural systems and gender oppression influence not only women's perspectives on their bodies, but also their psychological functioning, thus further developing the bioecological framework's

emphasis on macrosystemic influences of body image development (see Figure 3). They posit that women's bodies are commonly objectified in popular culture, the media, and interpersonal contexts, and women's physiques are "so often separated from her person" and regarded "as bodies that exist for the use and pleasure of others" (Fredrickson & Roberts, 1997, p. 3). Social expectancy theory and the concept of the "looking glass self" state that people come to develop self-views as reflections of how others behave toward them (Pruzinsky & Cash, 2002). Drawing from these concepts, body objectification theory states that women internalize societal perspectives and likewise view themselves and aspects of their bodies as objects to be evaluated and used. As noted earlier, society and the media propagate the notion of thinness as beautiful, successful, and moral, and women internalize these notions as well, engaging in self-objectification. Physical attractiveness becomes synonymous with power within everything from business and romantic relations to women's own peer groups and social circles.

According to the model of body objectification, this internalization then leads to body monitoring, whereby women become self-conscious and chronically vigilant about how they may be perceived, by "real or imagined, present or anticipated surveyors of their appearance" (Fredrickson & Roberts, 1997, p. 180). The more internalization of societal standards and associated body monitoring a woman experiences, the more she will suffer from consequences such as shame, anxiety, less peak motivational states, and decreased internal body awareness. Fredrickson and Roberts describe that a large component of shame involves the fear of negative evaluation from others, whereby women feel worthless and powerless against the pressure to live up to unattainable and internalized standards. While anxiety in general arises from the internalization of body

Figure 2.


Bronfenbrenner: Bioecological Framework As It Informs Current Study's Selection of Constructs of Interest
Below each description and examples of system components is a listing of which of these components exist in the current study. Each of these components is underlined corresponding to the models/theories which specifically emphasize these elements.
Key: = Body Objectification Model = Dual Pathway Model of Disordered Eating
= Multidimensional Model of Eating Disorder Symptomatology
Chronosystem: Current study: transition to college, increased social comparison, shifting peer networks, leaving family, increased autonomy.
Mesosystem: Connecting structures of multiple systems
Macrosystem: Cultural Context, Developing/Industrialized Country, SES, Race/Ethnicity, Cultural Values & Norms, Gender Norms, Privilege, Worldviews, Stereotyping, Oppression
Exosystem: Extended Family, Parental Workplace, Media Messages
Microsystem: Family, Classroom, Friends, Teachers/Professors
Current Study: Diverse Racial Groups, Identity Development has an Ethnic Focus (Ethnic Identity), Women
Biosystem: Temperament Personality Physical Features
Current Study: Negative Affect (e.g., Anxiety, and more specifically, Fear of Negative Evaluation), Self Esteem, Identity (i.e., Ethnic Identity), Body Mass Index, Body Image (e.g., Appearance Anxiety, and more specifically, Social Physique Anxiety)

objectification, body preoccupation such as appearance-related anxiety would be especially salient, because women have little control over when and where their physical features will be objectified. The amount of time and energy women spend engaging in body monitoring and feeling shame and anxiety lessens their opportunities to engage in peak motivational states and lessens their perceptual resources to detect internal bodily states such as hunger. In conclusion, these emotional and experiential states may incite some women to engage in disordered eating as an attempt to gain control and meet the unrealistic standards of society or as a passive protest against their powerlessness to control the way their bodies are seen by others. In addition, these emotional states may result in more general mental health problems and decreased well being. This is especially likely to occur in adolescence and young adulthood when young women first begin to experience less private ownership of their bodies and a realization that their physical features appear to exist to please and be evaluated by the general public.

Empirical Evidence for Body Objectification

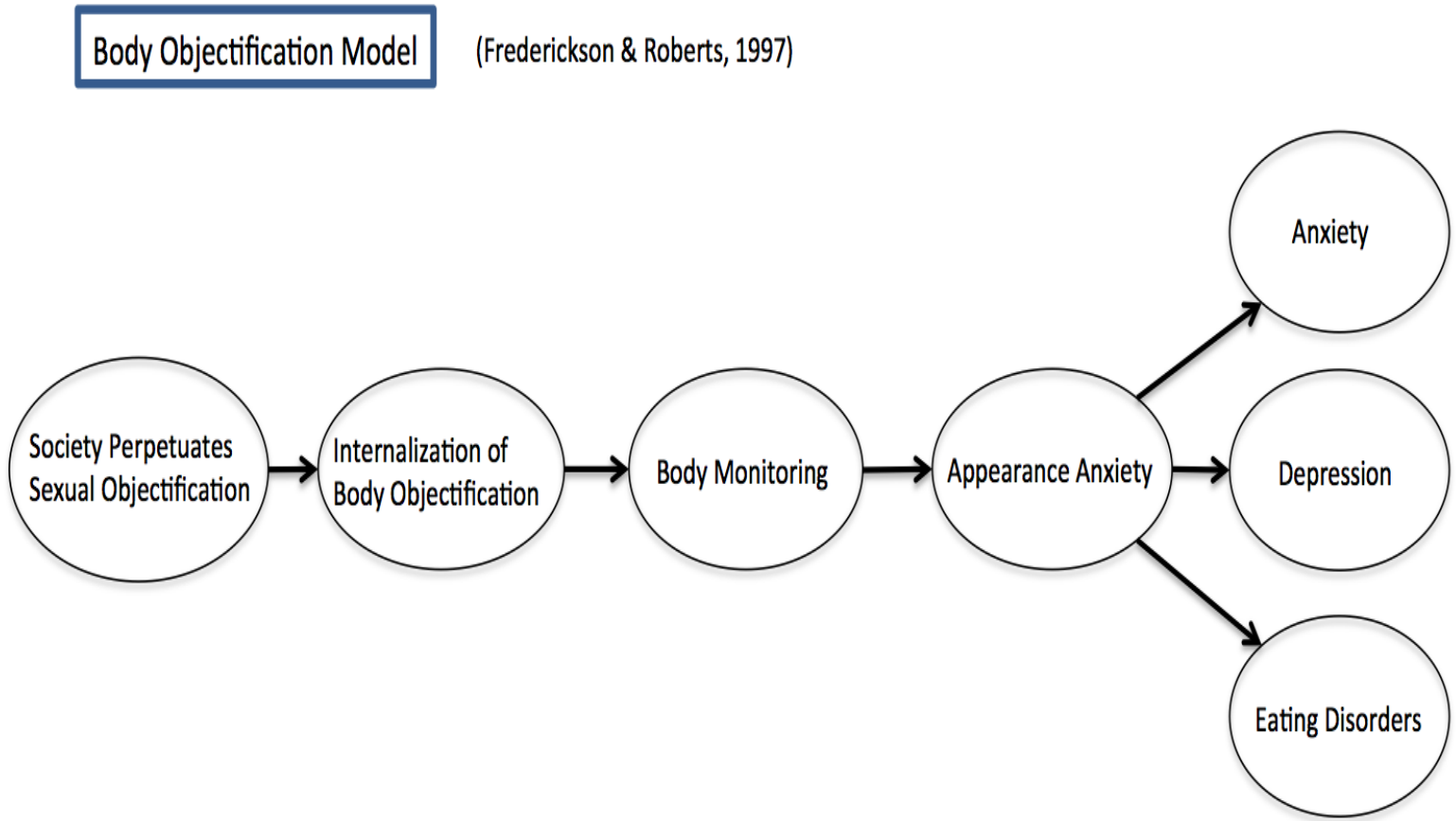
Research generally supports the body objectification model. Thin-ideal internalization and body monitoring mediate the relation between reported sexual objectification experiences and body shame. Also, thin-ideal internalization, body surveillance, and body shame are directly linked to disordered eating (Moradi, Dirks, & Matteson, 2005). Experimental research among undergraduate students also supports these propositions. For instance, one study examined whether experimentally manipulated self-objectification salience predicted body shame and disordered eating (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998). Fredrickson and colleagues reasoned that body objectification takes up attentional and concentration resources and

may therefore disrupt one's cognitive functioning. In addition, the behavioral outcomes only occurred among women in the self-objectification salience condition and did not occur among men in either condition. The authors concluded that young women who are socialized into a culture of female sexual objectification are those who therefore suffer unique behavioral and emotional consequences.

Reasoning that eating disorders have a peak onset in late adolescence, Slater and Tiggemann (2002) tested the tenets of body objectification among a group of adolescent girls. Specifically, there was partial mediation of appearance anxiety on the relation between self-objectification and disordered eating (Slater & Tiggemann, 2002). This implies that self-objectification leads directly to disordered eating, but that higher self-objectification may lead to higher appearance anxiety, and higher appearance anxiety in turn may lead to more disordered eating. Their results were generally consistent with previous research on the same variables with adult women (Noll & Fredrickson, 1998), but contribute support to an important element of the body objectification model not typically addressed in other models of body image and disordered eating: appearance anxiety.

A more comprehensive study of the body objectification model also revealed a central role of appearance anxiety. Tiggemann and Kuring (2004) assessed the self-objectification, self-surveillance, body shame, appearance anxiety, flow, awareness of internal bodily states, disordered eating and depressed mood of undergraduate men and women. The body objectification model fit well, and in their path analysis, self-objectification appeared to lead to self-surveillance, which led to increased body shame and appearance anxiety, which led to depressed mood as well as disordered eating. No

Figure 3.


Body Objectification Model
(Frederickson & Roberts, 1997)
Society Perpetuates Sexual Objectification
Internalization of Body Objectification
Body Monitoring
Appearance Anxiety
Anxiety
Depression
Eating Disorders

significant direct pathways were uncovered between self-objectification and the outcomes, underscoring the importance of body shame and appearance anxiety as mediators between self-objectification and resulting negative affect and disordered eating (Tiggemann & Kuring, 2004). Unfortunately, although the participants were asked to gauge the degree to which they felt physical aspects of their bodies were objectified by others (e.g., appearance and weight) this study did not assess participants' perceptions of their appearance or BMI. Therefore, the current study addressed this limitation by incorporating both of the biosystem variables of appearance anxiety and BMI.

The body objectification model was also tested with White American and Black American women from a psychology subject pool at an undergraduate university (Mitchell & Mazzeo, 2009). Each participant completed measures of sexual objectification, habitual body monitoring, thin-ideal internalization, body dissatisfaction, and anxiety, depressive, and eating disorder symptoms. Sexual objectification appeared to lead to thin-ideal internalization and body monitoring, which led to body dissatisfaction, which led to both anxiety and depression. Anxiety itself also led to depression among White American women, and both body dissatisfaction and depression led to eating disorder symptoms for both groups. Notably, state and trait anxiety were not strongly related to eating disorder symptoms for either group, whereas other research had implied that appearance anxiety predisposes to disordered eating. This study also provides evidence for the viability of this model across various racial groups. In conclusion, the body objectification model lends support to appearance related anxiety as a unique type of anxiety linking sociocultural influences, negative affect, and disordered eating.

One drawback in the literature on body objectification is a dearth of research on variables which may gauge the degree to which individuals feel connection and commitment to their ethnic groups, and few tests of this model have occurred across different racial groups. Given that sociocultural influences are posited to be strong sources of body image concerns, and that the Bronfenbrenner framework emphasizes the importance of macrosystemic level influences in development, it is puzzling that research has not focused on the role of ethnic identity among diverse groups. Therefore, in a later section of this literature review, the role of ethnic identity will be hypothesized for the proposed bioecological model. Additionally, Bronfenbrenner's model highlighted the importance of considering biophysical features and genetic components of body image development, such as BMI. However, the body objectification model neglects the potential role of BMI. For these reasons, the current study aimed to improve upon the body objectification theory by assessing not only fear of negative evaluation as an aspect of negative affect resulting from appearance anxiety, but also BMI as a predictor of appearance anxiety. Of note, another bioecologically-based model, the dual pathway model of disordered eating, provides further rationale for integrating BMI with body image and negative affect. Another drawback in the literature on body objectification is a dearth of research on self-esteem, given that this surfaces as an important variable from a Bronfenbrenner framework. Therefore, the current study improved upon past research by integrating another model of body image development that does focus on the role of self-esteem: the multidimensional model of eating disorder symptomatology. In the following sections, the dual pathway model of disordered eating and the multidimensional model of

eating disorder symptomatology are presented, along with respective critiques of their strengths and limitations.

Dual Pathway model of disordered eating

While an investigation of body image development from the Bronfenbrenner bioecological framework emphasizes the importance of BMI in body image development, it does not specify how BMI may relate to body image and elements of negative affect such as social anxiety. The body objectification model does not include BMI. However, the dual pathway model of disordered eating, developed by Stice (1994), does posit more specific relations between BMI, body image, and negative affect (see Figure 4). Stice hypothesizes that internalization of unhealthily thin sociocultural ideals leads to body dissatisfaction when women realize that their body weight and physiques are inconsistent with these unrealistic ideals. Because dieting is so often a method of controlling one's weight, body dissatisfaction may then lead to dieting. Body dissatisfaction may also give rise to negative affect directly, because women's body weight and physical shape are often heavily evaluated in U.S. culture. Likewise, dieting may lead to negative affect because of the high rate of dietary failures, unrealistic and unattainable dietary goals, and the negative impact of food deprivation on one's mood. Both dieting and negative affect predispose women to eating pathology because dieting puts women at risk for further irregular eating patterns, and because adherence to restrained or irregular eating patterns may help women avoid negative affect through distraction and comfort. The dual pathway model is named as such, because it posits that there are two mechanisms by which body dissatisfaction leads to disordered eating. One path is mediated by negative affect, and one path is mediated by dieting.

Unlike the body objectification model, the dual pathway model places more importance on the discrepancy between women's perception of actual body shape and size and their ideal for themselves. In other words, the smaller the discrepancy between one's actual and ideal body, the less resulting negative affect about one's body. Theoretically, different sociocultural contexts dictate roughly different body mass index (BMI) ideals to be internalized, because some cultures are thought to emphasize larger body ideals than others. Thus, the dual pathway model highlights the importance of assessing the BMI of one's participants, either to control for BMI or incorporate it into existing models.

Empirical Evidence for Dual Pathway

Experimental, correlational, longitudinal, and prospective research designs additionally lend support for the dual pathway model. Tests of the mediational paths posited in the dual pathway yield good model fit among participants between 13 and 17 years of age. These imply that pressure to be thin and thin-ideal internalization raise body dissatisfaction, which then increases dieting and negative affect, with both dieting and negative affect contributing to bulimic symptoms (Stice, 2001). Fear of negative evaluation, a type of negative affect, contributes substantially to explaining eating symptomatology (Utschig, Presnell, Madeley, & Smits, 2010).

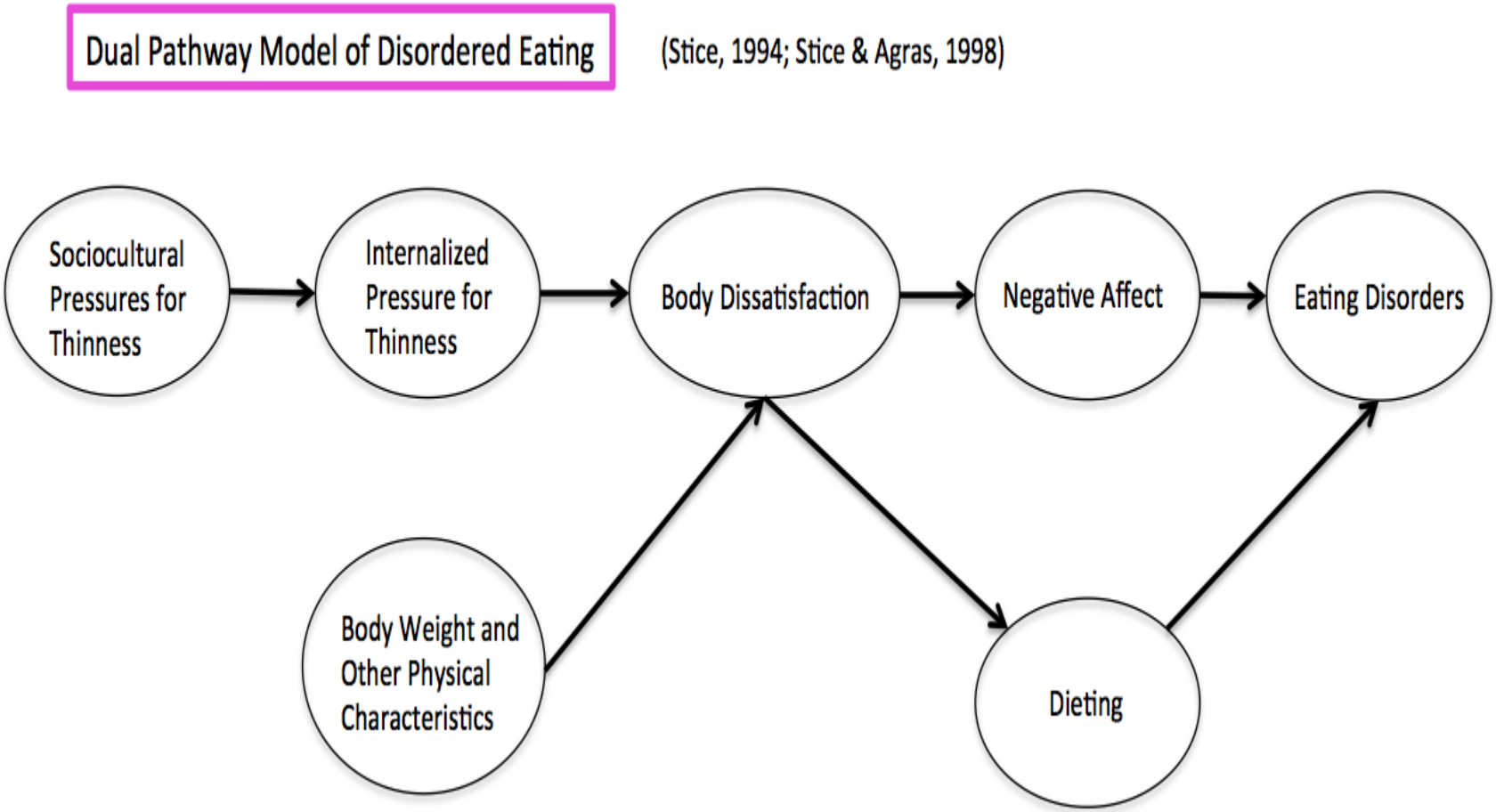
The Role of Negative Affect

In his description of the dual pathway model, Stice highlighted negative affect as both an important precursor to eating disorders, and an important standalone outcome. However, he did not originally specify the type of negative affect to which he was referring. Interestingly, Stice and other researchers of the dual pathway model have

operationalized negative affect in a multitude of ways, such as negative affect (measured by the negative affect subscale of the Positive Affect Negative Affect Schedule), depression, and affective distress. A more recent study by Tylka and Subich (2004) was instrumental in expanding the dual pathway model to include different conceptualizations of negative affect. These authors also integrated body objectification elements (e.g., appearance anxiety) with this different definition of negative affect, and also expanded the new model to include multidimensional components, such as personal, relational, and sociocultural variables. In doing so, they integrated many of the bioecological elements reviewed above and followed the recommendations of various authors who had noted that current models were unidimensional and neglected the complexity inherent in body image and disordered eating development (Tylka & Subich, 2004; Stice, 2002a).

In sum, the dual pathway model adds unique considerations for the study of body image development above those relationships that could be surmised by Bronfenbrenner's framework and by body objectification theory. First, it incorporates BMI into the model as a precursor to body dissatisfaction among women. Second, it contributes the idea that negative affect is a ubiquitous consequence of body image concerns. However, the dual pathway model does not specify which type of negative affect likely arises out of body dissatisfaction. Fortunately, the body objectification model did just this, as a review of intrapsychic variables in its framework revealed anxiety as a key consequence of body image concerns. Additionally, an investigation of the Bronfenbrenner bioecological framework described previously reveals social anxiety and fear of negative evaluation as specific types of anxiety that are correlated with body image problems. The Bronfenbrenner framework thus guided the current study in the

Figure 4.


Dual Pathway Model of Disordered Eating
(Stice, 1994; Stice & Agras, 1998)
Sociocultural Pressures for Thinness
Internalized Pressure for Thinness
Body Dissatisfaction
Negative Affect
Eating Disorders
Body Weight and Other Physical Characteristics
Dieting

selection of fear of negative evaluation as the measure of negative affect for the study. As with the body objectification theory, the dual pathway model does not account for variables which may gauge the degree to which individuals feel connection and commitment to their ethnic groups, and few tests of this model have been conducted across different racial groups. Therefore, the current study incorporated ethnic identity into the new and integrated bioecological model and tested hypotheses and research questions across racial groups. Additionally, like the research on the body objectification model, there is a dearth of research on participants' self-esteem as related to body image development. Given that the Bronfenbrenner bioecological framework emphasizes another intrapsychic variable of self-esteem as an important consideration, the current study utilized a third model to inform the integration of self-esteem into the new bioecological model.

Multidimensional model of eating disorder symptomatology.

The multidimensional model of eating disorder symptomatology is relevant to the current study, because it integrates some of the important elements of the body objectification theory and the dual pathway model, while additionally positing the role of self-esteem in the development of body image. While an analysis of correlates of body image from Bronfenbrenner's bioecological framework reveals that self-esteem is related to body image, it does not specifically predict directional relations between self-esteem, other predictors of body image, and body image itself. Therefore, the multidimensional model enhances Bronfenbrenner's bioecological model by specifically predicting that self-esteem and neuroticism, as measures of negative affect proposed in the dual pathway model, predispose young women to body preoccupation. Additionally, it builds upon the

body objectification theory by emphasizing body preoccupation as the most detrimental type of body image for the mental health of young women (see Figure 5).

Tylka and Subich (2004) proposed that eating disorders and body image disturbance also involve sociocultural variables such as the cultural pressure for thinness, personal variables such as personality, behavioral, cognitive, and affective components, and relational variables such as supportive social networks. In a study of 463 women from psychology courses and sororities of two universities, participants completed measures of eating disorder symptomatology, pressure for thinness, social support from friends and family, and internalization of the thin-ideal stereotype. Tylka and Subich also found substantial correlations between body preoccupation, neuroticism, and self-esteem. For instance, 25% of the variance in body preoccupation was accounted for by neuroticism, such that the higher the neuroticism, the higher one's body preoccupation. Additionally, 31% of the variance in body dissatisfaction was accounted for by self-esteem, and between 40 and 56% of the variance in neuroticism was accounted for by self-esteem, with self-esteem negatively related to each of these variables.

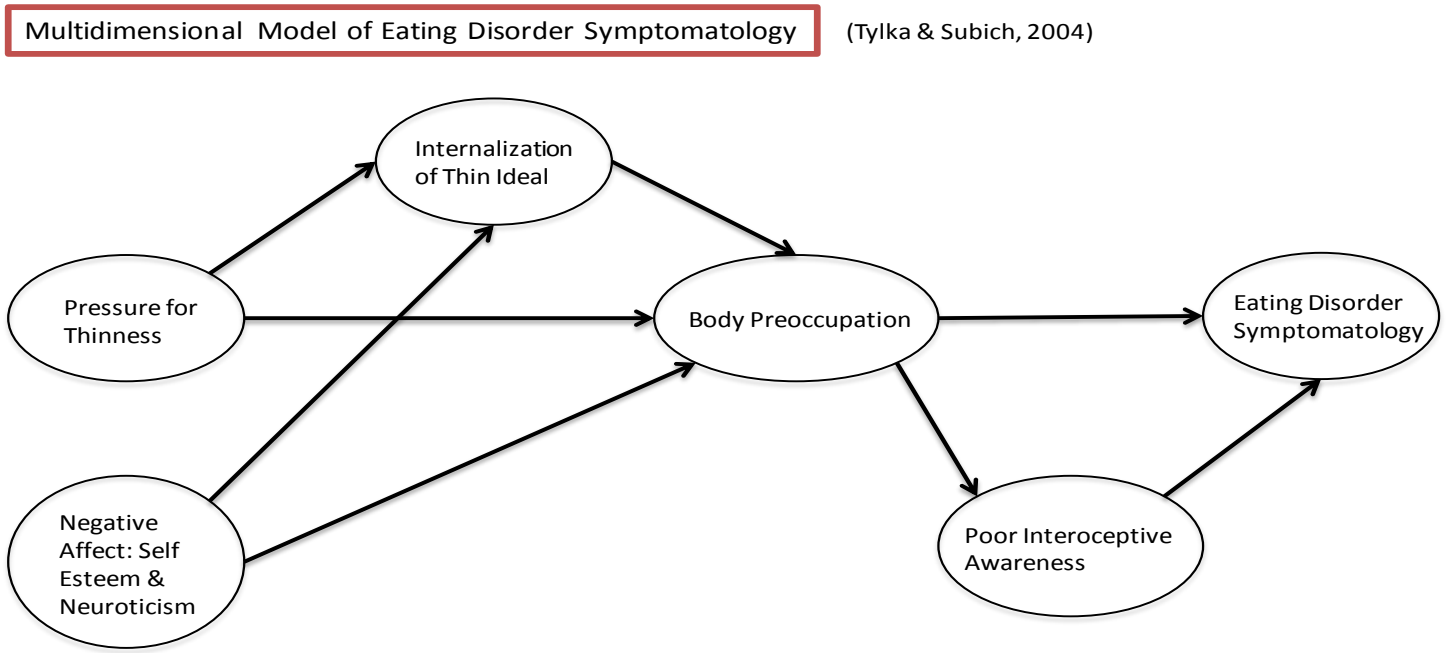
Unlike the dual pathway and body objectification models, Tylka and Subich (2004) predicted and found support for negative affect as preceding body image disturbance, rather than negative affect as resulting from body image disturbance. Although these findings are consistent with the theoretical propositions of other researchers (Griffiths & McCabe, 2000), Tylka and Subich (2004) acknowledge that body image disturbance may be more likely to predispose women to increased negative affect rather than be caused by negative affect. They encouraged continued testing of the role of negative affect as either an outcome or a predictor in body image research within a

multidimensional, ecological framework. The multidimensional model makes a significant contribution by assessing the link between negative affect and body preoccupation.

The multidimensional model also incorporates the biosystem variable of self-esteem into the model as a precursor to body preoccupation. Again, as with research on the body objectification theory, BMI was not assessed in Tylka and Subich's (2004) model, therefore it cannot be ruled out as an extraneous variable in these findings. Furthermore, the dual pathway model suggests that BMI be integrated in a meaningful manner in bioecological models of body image development, so as to assess its complex relations with the outcomes of interest. The current study aimed to do just this.

In sum, the body objectification, dual pathway, and multidimensional models posit specific predictions about the interrelations of bioecological components in the development of both body image and social anxiety. The dual pathway model posits that if one's BMI conflicts with society's standards for a desirable BMI, one will experience body dissatisfaction, which, in turn, leads to negative affect. Stice (1994) pioneered contemporary descriptions and demonstrations of the importance of negative affect as a standalone outcome of body image problems. Similarly, the body objectification model emphasizes that sociocultural pressure for thinness leads to appearance anxiety, which leads to various forms of negative affect. Indeed, appearance anxiety routinely surfaces as a key component of both body image and social anxiety (Tiggemann & Kuring, 2004; Muller, Koen, & Stein, 2004). While the multidimensional model highlights that various types of negative affect such as low self-esteem and neuroticism may either precipitate or result from body image disturbance, social anxiety has not yet been tested as a type of

Figure 5.


Multidimensional Model of Eating Disorder Symptomatology
(Tylka & Subich, 2004)
Internalization of Thin Ideal
Pressure for Thinness
Body Preoccupation
Eating Disorder Symptomatology
Negative Affect: Self Esteem & Neuroticism
Poor Interoceptive Awareness

negative affect. The current study aimed to integrate, replicate, and extend the findings of the body objectification, dual pathway, and multidimensional models, within an overaching bioecological perspective. As noted throughout this section, the Bronfenbrenner bioecological framework highlights the limitations of the research on these models, and provides guidance on strategically integrating their variables. To this end, predictor, moderator, and outcome variables were selected from those bioecological influences which emerge as most pertinent to the study of body image and associated social anxiety. These variables included self-esteem, BMI, and ethnic identity as predictors, social physique anxiety as a mediator and outcome, and fear of negative evaluation as an outcome. Given the lack of cross-racial comparisons of the aforementioned models, the variable review section also posits the role of race in the interplay between these variables. Evidence on the role of self-esteem as a moderator of the relation between BMI and social physique anxiety is also provided in their review.

Review of Predictor Variables and Moderating Variables

Ethnic Identity and Race

Because relatively few studies have measured cross-racial comparisons of models of body image and social anxiety development, the current study aimed to compare research findings within a racially and ethnically diverse group of students. Therefore, it is first important to define what was meant by race and ethnicity within the current study, especially because the overlaps and distinctions between the constructs of ethnicity, race, and cultural, racial, and ethnic identity are very complex and the field is still grappling with the differences in meaning of these constructs and processes. Recent scholars have noted that there is “growing pandemonium” in the field of psychology with regard to

these terms, due to lack of consensus and consistency in how these constructs are defined (Trimble, 2007). As such, an important consideration in research on ethnic identity development among various racial groups is a careful consideration of the definitions to be used, and their implications for the context and interpretation of relations between the constructs of interest in each study.

First, some argue that race is objective and a set of hereditary biological features (e.g., Rushton, 1997). However, others argue that race is a social construction based on perceived biological features (Trimble, 2007). Researchers have supported this latter definition, citing evidence that the social constructions of race involve the degree of social distance between different groups, such as their rates of intermarriage, levels of segregation, and interracial attitudes (Quintana, 2007). Therefore, in the current study, race was defined as a social construction which is based on perceived external characteristics, and is considered an important factor, particularly because it determines one's experiences of oppression, discrimination, marginalization, and privilege. Race is an especially important categorization, because these experiences form one factor which leads to the development of ethnic identity, a construct of interest in the current study. Therefore, it was hypothesized that those who self-categorize as monoracial White would have a somewhat different process of ethnic identity development compared with those with ancestry as people of color. It is likely that the perceived physical characteristics of those identifying as persons of color will lead to more experiences of oppression and discrimination based on certain physical features.

The current study used a dataset which was created in conjunction with the University of Maryland Office of Institutional Research, Planning, and Assessment, an

office which collects data on the UMD student body using definitions of race which parallel those used in the United States Census. They define race as a self-identified category, in which one indicates one's ancestral origins in any of the original peoples of a particular geographical region. For example, Black or African American is defined as a person having origins in any of the Black racial groups of Africa, Asian is defined as a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, and White is defined as a person having origins in any of the original peoples of Europe, the Middle East, or North Africa. In the current study, because some individuals may not identify with being African American, but rather Black American, the latter term was used.

Second, and similarly, ethnicity may also involve a demographic definition, such as a common language, national origin, or cultural norms and values shared between groups. However, ethnicity may additionally be considered a social construction, because ethnocultural groups may also have varying degrees of social distance between each other, as defined by their rates of intermarriage, levels of segregation, and intergroup attitudes (Quintana, 2007). Notably, these intergroup attitudes and segregation based on ethnocultural differences also contribute to oppression, discrimination, marginalization, and privilege, much as they do with racial groups. Therefore, in the current study, ethnicity was likewise defined as a meaningful social construction, because these experiences based on one's ethnocultural heritage likely lead to and foster one's subsequent ethnic identity development (Quintana, 2007).

Interestingly, in the 2000 U.S. census, many people who could have classified themselves as White actually preferred the label of their ancestral nationality or their

cultural group instead of the label White, which caused some scholars to call into question the utility of asking participants to self-categorize by using racial labels, and to instead use ethnic or cultural labels (Trimble, 2007). Therefore, a third issue of importance in the current study was the utility of the distinction between race and ethnicity. Additionally, the distinction between race and ethnicity is cloudy, because the social distances between groups which are considered racially different can be either greater or lesser than the distances between those who are considered to be ethnically distinct. As an example, Latina/o is considered an ethnic group on the U.S. Census, while White and African American/Black are considered racial groups. However, Latina/o youth typically experience more segregation from White youth, as compared to African American/Black youth, and experience a similar impact of prejudice as African American/Black youth (although the focus of this prejudice has been argued to be ethnocultural rather than racial) (Quintana, 2007). Therefore, if we are using these socially constructed definitions, what is the relevant distinction between race and ethnicity?

While there are no easy answers to this dilemma, the current study focused on the distinction as related to the hypothesized relations between the constructs of interest, as well as the appropriate context within which to interpret the results. Some scholars have argued that the distinction between race and ethnicity is only important to the extent to which they lead one to experience prejudice, and therefore, the sociocultural ramifications of being perceived as a member of a particular race or ethnic group are likely to be a result of the type and frequency of exposure to prejudice, rather than whether the prejudice is specifically focused on racial or ethnic heritage (Quintana,

2007). Again, evidence is compelling that ethnic identity development is sparked by perceived prejudice and discrimination (Pahl & Way, 2006; Sellers & Shelton, 2003), regardless of whether experiences of oppression are based in race or ethnicity. Therefore, the current study adopted the philosophy that what matters most for one's ethnic identity development is not race or ethnicity per se, but rather one's experiences of discrimination and oppression based on the relative sociocultural status of one's racial or ethnic group membership in U.S. society. For this reason, in the current study, hypotheses about ethnic identity depended on participants' likely exposure to the influences which are most salient to ethnic identity development, whether these involve either their ethnic or racial group membership, or both.

Those groups identified as particularly vulnerable to racioethnic discrimination, marginalization, and oppression within the context of a U.S. university setting include African American/Black, Asian American, Latina/o, and multiracial students (Morrison, 2010). The current study asked participants to categorize both their race and ethnicity as determined by the regulations of the U.S. Census (i.e., including the racial groups above, as well as whether students self-classified their ethnic group membership as Latina/o). As described later in the methods and results chapters, some of minority groups could not be studied in the current project, due to sample size limitations. As a result, the focus of the current study is on the three largest groups in the incoming freshman class at UMD: Asian American, Black American, and White American students.

Culture and Ethnic Identity

Background. It was noted earlier that relatively few studies have focused on the role of ethnic identity in the body image development of Black American, Asian

American women, and White women, despite the plethora of hypotheses about how sociocultural influences may be strong sources of body image concerns. Importantly, the Bronfenbrenner framework emphasizes the ubiquitous nature of such macrosystemic level influences in development. Therefore, the Bronfenbrenner bioecological framework provides the impetus for a closer look at culture and the way that cultural influences impact women's identities and their subsequent development of body image concerns. The current section provides a background and definition of culture and ethnic identity, followed by research on ethnic identity and race as related to self-esteem and body image. There are many definitions of culture, but one definition which was used in the current study was posited by Miller and Sheu (2008) as, "an evolving and shared system of meaning that provides context and value through history, ideology, social norms, roles, beliefs and values" (p. 104). Individuals' interactions can subsequently transmit culture between each other within ethnic groups and between ethnic groups.

As will be explored later, ethnic identity arises out of a continually dynamic and multifaceted process through which individuals explore and develop commitment and understanding of their membership to an ethnic group. Because ethnic identity was hypothesized to be related to body image as early as 1990 by Root, but has not been assessed as a significant predictor of body image across multiple racial groups, it was incorporated into the current study as a predictor in the new bioecological model. The current section includes further elaboration on ethnic identity, correlates and outcomes of ethnic identity development, and a brief background on research and theories of the role of race and ethnic identity in body image literature.

Ethnic identity development is a specific and important domain of one's general identity development, also facilitating the growth and development of personal life goals and helping people understand and define the meaning of their relationships with others. While individuals cannot choose their racial background, they can choose the extent to which their ethnic group membership is important and carries personal meaning, and the degree to which they wish to be engaged in its values, attitudes and behaviors (Phinney & Ong, 2007). As with ego identity development, the process of ethnic identity development occurs throughout childhood and young adulthood, but it also includes stages of exploration and commitment to one's minority culture (Ontai-Grzebik & Raffaelli, 2004). Jean Phinney (1992a), one of the first researchers to explicitly describe these stages, suggested that they can apply to both foreign immigrants and also American-born individuals of minority groups, as well as racioethnic majority groups. The nature of one's ethnic identity development is hypothesized to differ based on one's racial-ethnic group history of discrimination, privilege, and group status, with those of ethnic and racial minority groups having, in some ways, a distinct experience with ethnic identity development than majority groups.

Racioethnic Differences in Ethnic Identity Development. Young children of minority ethnic groups typically accept the values and traditions of their families, but begin to question these as they become increasingly exposed to peers of other backgrounds within the dominant culture and have firsthand experiences with prejudice and discrimination. To question and actively explore the personal meaning of one's ethnicity and ethnic heritage is to engage in ethnic identity exploration (Phinney, 1992a). Typically, exploration and subsequent commitment to an ethnic identity will result in

ethnic identity achievement, which involves a sense of dedication to one's ethnic group, a secure sense of being a group member, positive evaluations of the group, and involvement in ethnic group traditions (Phinney, Jacoby, & Silva, 2007; Ontai-Grzebik & Raffaelli, 2004). A more rudimentary awareness of one's ethnicity and ethnic identity engagement may lead to isolation from one's minority culture, the dominant culture, or both (Phinney, 1996). It is important to note that one's ethnic identity status is subject to continuous and dynamic change over time.

While this theory of ethnic identity development holds across races and ethnicities, most White ethnic groups in the U.S. have become assimilated into and identified with what is generally referred to as a dominant mainstream White middle class culture, and have become less identified with a particular ethnic group or culture (O'Donoghue, 2004). Particularly among middle class Whites, "ethnic identity is more representative of affinities for certain cultural practices rather than an important part of White's self-concepts, and is considered 'optional'" (McDermott & Samson, 2005). Therefore, ethnic identity tends to be less salient for majority groups such as White racial groups. In fact, White American preadolescents, adolescents, and young adults do typically hold lower ethnic identity exploration and commitment than their minority group counterparts (Spencer, Icard, Harachi, Catalano, & Oxford, 2000; Phinney & Alipuria, 1990). Spencer and colleagues (2000) discovered that White American college students had significantly lower scores on ethnic identity exploration and commitment than monoracial minority and multiracial students. Phinney and Alipuria (1990) found that, compared with monoracial White American adolescents, Asian American and Black students scored higher on ethnic identity search, but the three groups were no different in

terms of commitment. Notably, each participant rated the importance of five types of identity development, and White Americans rated ethnic identity as the least important.

However, as racioethnic majority groups such as Whites become more rather than less likely to have interracial and interethnic contact, their awareness of the realities of racioethnic oppression, discrimination, and privilege are likely to become more explicit (McDermott & Samson, 2005). Indeed, research indicates that ethnicity becomes more salient for Black Americans and White Americans alike, when they are interacting together (Semons, 1991), and college students of all ethnicities may be especially prone to engaging in this developmental journey, as they enter challenging situations which may include racial and ethnic compositions quite different from their home environments (Phinney, 2006). In support of this, ethnic identity exploration has been found to increase throughout the course of middle adolescence for both Black American and White American students, especially in the transition to more ethnically heterogeneous high schools (French, Seidman, Allen, & Aber, 2000; French, Seidman, Allen, & Aber, 2006). There is also evidence to suggest that the identities of college freshmen are particularly malleable to changes within ethnic identity status throughout the course of their first year (Syed, Azmitia, & Phinney, 2007). Research on ethnic identity development of White Americans supports the above theories that although it is less common to do so, they can and do go through a similar process of exploration of and commitment to their racioethnic belonging and can exhibit low to high levels of ethnic identification (Knowles & Peng, 2005; Lowery, Unzueta, Knowles, & Goff, 2006).

Ethnic identity and self-esteem. In her original theory of ethnic identity development, Phinney posited that ethnic identity development is an ongoing process

involving multiple dimensions, including behaviors, feelings of affirmation and belonging to one's group, and achievement (1992a). Inherent in this description was the notion that achieved ethnic identity includes positive feelings about one's ethnic group, and one ethnic identity measure (the Multigroup Ethnic Identity Measure) included an item assessing pride and affirmation of one's ethnic group (Phinney, 2007). An achieved sense of ethnic identity has been associated with multiple aspects of well-being, and the positive relation between ethnic identity and self-esteem is well-documented (Phan & Tylka, 2006; Phinney, 1992b; Phinney, Chavira, & Williamson, 1992). However, other researchers have posited that a person with an achieved sense of ethnic identity may not necessarily hold a positive view toward their ethnic group, suggesting that the positive valence included in some measures of ethnic identity be removed (Umaña-Taylor, Yazedjian, & Bámaca-Gomez, 2004). Some argued that in this definition of ethnic identity, "one's commitment is confounded with one's affirmation of one's ethnic identity," (Umaña-Taylor et al., 2004, p. 12). Although the debate may still be ongoing, in 2007, Phinney and Ong removed the positively-valenced item from the MEIM in their new measure the MEIM-R. The question of the association between self-esteem and ethnic identity as measured by the MEIM-R is open to further empirical exploration.

However, there is a strong theoretical basis to support the idea that an achieved ethnic identity should result in positive self-esteem. First, as an aspect of ego identity development, the experience and exploration involved in developing a strong ethnic identity commitment should similarly provide a solid basis of self-knowledge and confidence, from which one can base life decisions (Smith & Silva, 2011). From a developmental perspective, this process of learning about one's ethnic group and making

a commitment to the group leads individuals to reject negative stereotypical views of their group (Phinney, 1989). Moreover, identification with a larger group may provide a sense of belonging and social support, which would foster a stronger sense of self-esteem (Smith & Silva, 2011). Furthermore, Social Identity Theory (Tajfel & Turner, 1986) predicts that, to the extent that they are committed members of a group, individuals give more favorable evaluations to their own group as compared to other groups, in order to enhance their self-esteem. Group membership, including a committed ethnic group membership, would therefore become an important source of positive self-concept. For each of these reasons, ethnic identity commitment should be positively related to one's sense of strength and self-acceptance when navigating life decisions and social situations, and particularly, one's overall self-esteem (Smith & Silva, 2011). Romero and Roberts (2003) found that affirmation but not exploration was significantly related to self-esteem, indicating that ethnic identity commitment may be more strongly related to self-esteem than exploration.

A recent meta-analysis of studies linking ethnic identity and well-being demonstrated that ethnic identity and self-esteem are strongly related, with no differences in the magnitude of this relation for African Americans, Asian Americans, Hispanic/Latina(o) Americans, and Native Americans (Lusk, Taylor, Nanney, & Austin, 2010; Smith & Silva, 2011; Bracey, Bámaca, & Umaña-Taylor, 2004). Phinney and Alipuria (1999) found that ethnic identity search was positively related to self-esteem for Black Americans and ethnic identity commitment was positively related to self-esteem for Black Americans, Asian Americans, and White Americans, but less so for White Americans. It has been posited that because ethnic identity is not typically a salient and

central component of identity for White Americans, it has less of an impact on their self-acceptance, self-regard, and self-worth. Therefore, the relation between ethnic identity commitment and self-esteem was speculated to be less robust for this group.

Of note, the relations between ethnic identity and self-esteem for biracial or multiracial individuals show more variability compared to monoracial people of color, particularly if they identify White as one of their racial groups. Some may choose to identify as White, some may choose not to identify as White, or to identify as monoracial, biracial or multiracial instead. For instance, Rockquemore and Brunsma (2002) found that among those who are both Black and White, 38.7% report feeling biracial but that they are treated like a Black person, 22.6% reported that their biracial identity was validated by others, 13% identify as only Black, 3.6% identify as only White, 4.8% identifying as either Black or White depending on the context, and 13.1% choosing to identify with no race. What these individuals happen to identify with at any give time appears to give rise to unique fluctuations in the relations between ethnic identity and self esteem. In addition, those who are biracial or multiracial White but who do not integrate or acknowledge a biracial identity tend to experience more difficulty in developing positive self-esteem than their biracial or multiracial peers (Lusk, Taylor, Nanney, & Austin, 2010). Unfortunately, biracial and multiracial students in the current study were not asked which racial group they identify with most. Without this information, it was deemed appropriate to not include the data from these participants, and that the complex and unique experiences of this group would be best tapped by a follow-up study which acknowledges and tailors questions to tap their unique identity statuses.

Race, ethnic identity and body image. Overall, ethnic identity is an important biosystem variable with respect to body image development, as it develops within family and peer microsystem contexts as a result of broader cultural macrosystemic influences. As noted previously, some researchers suggest that the cultural values of minority groups are protective against body image concerns, because these values emphasize and normalize larger body types. Reviewers of early research into cultural differences on body image have found widespread assumptions that White American adolescents had more pathological body dissatisfaction and preoccupation than adolescents of racial minority groups (Root, 1990). Much of the early research on body image and eating disorders among diverse groups completed between-racial-group comparisons and implied that any cross-racial differences were due to minority women holding ideals of healthier and less-thin body types (Root, 1990).

Recent research underscores that Asian American and Black American women are indeed vulnerable to body image concerns at equal or greater levels than White women. This indicates that the relation between body image problems and culture is indeed more complex and involves more than simply being of a certain race. Some studies demonstrate higher rates of body dissatisfaction in Asian American women than Whites (Robinson et al., 1996). More recent work indicates that body dissatisfaction is similar except in the lowest weight group, where Asian American women are less satisfied than White women (Robinson et al., 1996). Differences between the body satisfaction of Black American and White women are quite small if nonexistent, and roughly a quarter of Black American college students display at least subthreshold eating disorder symptomatology (Forbes & Frederick, 2007; Grabe & Hyde, 2006; Mulholland & Mintz,

2001). Additional studies have found that racial differences in body dissatisfaction disappear when results are adjusted for individual differences in BMI (Grabe & Hyde, 2006; Wardle, Bindra, Fairclough, & Westcombe, 1993). Researchers have therefore called for a greater focus on the body image development and consequences of body preoccupation among Asian American and Black American college students (Phan & Tylka, 2006; Rogers Wood & Petrie, 2010).

In sum, early research describing minority women as invulnerable to body image problems overly emphasized between group differences and neglected to study within-group processes which would have documented the existence of real body image problems among racial minority groups. In 1990, Root argued that racial minority women do not automatically adopt the values of their minority culture, but may be just as likely to adopt Western values of thinness as their White American peers. Additionally, body image concerns can be a marker for broader identity issues, and can result in negative affect and social anxiety relating to how and whether they fit into their native or the majority culture. She described ethnic identity development as a key component of minority youths' development of positive self-images, and because positive self-concept is a buffer against body image concerns, early research needed to account for individual variability on self-concept and associated ethnic identity.

Root cited pervasive stereotypes, racism, and ignorance of culturally-sensitive assessment, diagnosis and treatments as fueling the lack of research on underrepresented populations and lack of attention to their unique developmental processes. In 2001, she reiterated her stance that ethnic identity needed to be assessed more often in the body image literature, because women who reject the belongingness and values of their ethnic

group may be more vulnerable to internalizing expectations typically directed toward White American women, including those of thinness. In short, she suggested two paths from ethnic identity development to body image concerns: one through the possible adoption of specific ethnic values of ideal body type, and the other through a stable versus unstable sense of self. Throughout the past several decades, experts in the field have repeatedly insisted on the importance of measuring ethnic identity as related to body image concerns (Striegel-Moore & Smolak, 1996). Unfortunately, there exists a substantial amount of work yet to be done. Even measures of thin-ideal internalization so often used in cross-racial comparisons of the body objectification, dual pathway, and multidimensional models have shown inadequate validity with non-White American racial groups such that researchers have recommended they not be used with ethnic minority women until they are significantly altered or until others are validated (Cashel, Cunningham, Landeros, Cokley, & Muhammad, 2003).

In an effort to parse out racial group with acculturation level and racial and ethnic identity, more recent studies attempted to measure the degree to which adherence to cultural values, group belongingness, and identity achievement were associated with body image concerns. Research provides equivocal findings regarding the hypothesis that an adherence to cultural values as measured by ethnic identity may influence the development of one's body image. White American college women experience a positive relation between ethnic identity and body dissatisfaction, supporting the notion that women with a strong ethnic identity may internalize their in-group cultural values for thinness (Petersons, Rojhani, Steinhaus, & Larkin, 2000). However, among Black American women, ethnic identity is unrelated to body dissatisfaction (Petersons, et al.,

2000). Both researchers and their participants have reacted strongly against the prevailing belief that Black American values of the female body are larger and more accepting of flaws than those of White women (Poran, 2006). For instance, some Black women state that Black culture emphasizes thin physiques, and Black men, Black women, and Black models alike transmit a suffocating pressure to be thin (Poran, 2006). In fact, most, if not all, cultures appear to have unique, albeit specific and often unrealistic standards for appearance that may be internalized and create problematic mental health outcomes (Forbes & Frederick, 2008).

Ethnic identity, self-esteem, and body image. In light of these inconsistencies, might there be some extraneous variable, other than cultural values, which buffers against any sociocultural messages about pressure for thinness, regardless of their sociocultural source, and even regardless of racial group? Recall that self-esteem itself can serve as a protective factor against body image disturbance, and that developmental models indicate ethnic identity as a precursor to positive self-esteem. Phan and Tylka's (2006) model investigated whether self-esteem might be confounded with ethnic identity and therefore a potential source of these inconsistent findings. They hypothesized that there may be some protective cultural factors among their Asian American sample, that would result in higher ethnic identity being associated with lower body preoccupation. Earlier it was mentioned that in their multidimensional model, Tylka and Subich (2004) found support for self-esteem leading to body image disturbance. Therefore, Phan and Tylka acknowledged that self-esteem may mediate the relation between ethnic identity and body preoccupation.

Using an ethnic identity measure assessing behaviors, affirmation and belonging, and achievement, they found that self-esteem fully mediated the relation between ethnic identity and body preoccupation, indicating that ethnic identity alone does not account for a significant proportion of variance in body preoccupation. Additionally, their findings contradicted the popular notion of ethnic identity as protective, because women with high ethnic identities had an even stronger association between pressure for thinness and body preoccupation than women with lower ethnic identities. The authors reason that collectivist values of interpersonal harmony may exert pressure on these women to feel more distressed about their bodies because they bear the risk of becoming poor reflections on their families. Also, disordered eating was not significantly related to ethnic identity, and Phan and Tylka posited that psychological variables (e.g., body preoccupation) may be more likely associated with ethnic identity than a behavioral variable such as eating pathology. However, Phan and Tylka did not control for BMI, an important limitation, given BMI's robust association with body preoccupation.

Additionally, they recruited for Asian American women, which may have contributed to their restricted range on ethnic identity affirmation, belonging and achievement, because only those with moderate or high ethnic identities may have self-selected for their study. This may have obscured any significant relations involving ethnic identity. Finally, they did not assess any resulting negative affect from body preoccupation, which would have been predicted by propositions of the dual pathway model. Nevertheless, their work represents a significant step forward in delineating the complex relation between ethnic identity and body preoccupation, while taking a first step to establishing cross-ethnic validity in a contemporary bioecological model.

Following studies on the multidimensional model have also supported its paths among Black American college women (Rogers Wood & Petrie, 2010). These also indicate that ethnic identity has only an indirect influence on body image among racial minority women, but they did not specifically assess the potentially mediation role of self-esteem or any negative affect outcome, such as anxiety. Rogers Wood and Petrie (2010) encourage future researchers to include both these variables in future within-subjects designs. They also support Stice's (2002a) argument that further within-subjects cross-sectional research should validate multidimensional models among various racial groups before an attempt at longitudinal verification.

Self-Esteem

Background. Self-esteem was included in the current study because it relates to both body image and social anxiety and because it is a key component in both Bronfenbrenner's bioecological framework and in multidimensional models of body image development. For example self-esteem is a precursor to the development of social anxiety, and is strongly related to body image consistently throughout adolescence (Harter, 2006). The current section will therefore give a definition and overview of self-esteem as relevant to late adolescence and early adulthood, and then link it to the other variables which comprise the new bioecological model proposed in the current study, such as race and body image. An overview of the biosystem construct of self-esteem begins with a background on the notion of self-concept. According to developmental theorists, one's concept of self forms as a result of both cognitive and social processes (Harter, 2006). Children begin this process by imitating others' attitudes, values, standards and behaviors, adjust their behavior to obtain approval of significant others,

and subsequently internalize others' opinions about them. It is during middle and late adolescence that children obtain the cognitive abilities to experience discrepancies between multiple aspects of their behavior and experience, such as their ideal selves, actual selves, personal perceptions of their personality, and others' perceptions of them. Therefore, children begin to grapple with the many and perhaps fragmented messages they have internalized from significant social figures in various social contexts. Late adolescence marks the new cognitive capability of integrating and resolving apparent inconsistencies in one's self-concept, by creating higher-level abstractions, normalizing their seemingly contradictory feelings and behaviors, and more realistically focusing on their personal future goals. Self-esteem thus develops from the ability to meet one's own expectations, successfully integrating discrepancies in one's evaluation of real and ideal self and eventually having a relatively stable sense of positive self-regard. As one element of one's self-concept, self-esteem can be defined as one's positive or negative view of oneself and an overall evaluation of one's worth (Guindon, 2010).

One is especially vulnerable to lower self-esteem when navigating unfamiliar contexts and transitions that require new skills in balancing demands of multiple life roles. For example, for many young adults, the transition to college is a time when balancing school, family and peers is coupled with a newfound autonomy, posing challenges to one's developing sense of self-certainty. For this reason, researchers highlight the importance of a supportive socializing environment during students' transitions to college (Harter, 2006). Moreover, beginning from their first orientation to the campus, college students may begin to experience themselves in different multicultural contexts and will need to engage in relations with individuals of other

ethnic groups and determine their unique identification with mainstream majority and minority cultures.

Self-esteem and race. Given that relatively few studies have measured cross-racial comparisons of body image and social anxiety models, and each of these outcomes relates to self-esteem, it is important to investigate how race relates to self-esteem. Within the U.S., it has been noted that Black American adolescents and young adults have higher self-esteem than their White American peers, contradicting earlier views that the experience of oppression and cultural marginalization for Black Americans would lower their self-esteem compared to White Americans. Note that one's self-esteem develops as one obtains feedback about oneself from significant others. Therefore, if Black American adolescents and young adults look to members of their own racial group for this feedback, their self-esteem would not necessarily be lower than that of White Americans. Among ethnic minority youth, development and engagement in a unique and integrated social identity may predispose one to developing strong self-esteem, especially if one can construct a sense of ethnic and racial heritage as positive and meaningful (Gray-Little & Hafdahl, 2000). Additionally, a positive ethnic and racial identity may buffer the potentially negative impact of stigmatization on one's self-esteem (Twenge & Crocker, 2002).

Self-esteem and body image. The associations between self-esteem and body image begin in middle to late childhood, as children develop the abilities to perceive and internalize others' perspectives on their physical appearance. This process is supported empirically, with one's self-esteem related to one's body image throughout early, middle, and late adolescence (Harter, 2006). Women have lower global self-esteem than do men

throughout the lifespan, but most notably during middle and late adolescence (Kling, Hyde, Showers, & Buswell, 1999). Perceived physical appearance is correlated with global self-worth, with correlations ranging from .66 to .82 among women (Kling, et al., 1999), and these results are consistent among individuals in English and non-English speaking countries alike, such as England, Ireland, Australia, Korea, and China (Harter, 2006).

Numerous studies have found that low self-esteem may increase one's vulnerability to internalizing societal messages and pressures to be thin, therefore increasing one's body image concerns and preoccupation (Striegel-Moore & Cachelin, 1999; Tylka & Subich, 2004). Likewise, high self-esteem may render women less vulnerable to developing body preoccupation (Phan & Tylka, 2006). Unfortunately, BMI was not measured in these studies, a critique that is repeatedly voiced in the body image literature, given that BMI is so robustly associated with both body image disturbance and self-esteem.

Body Mass Index

Body mass index, self-esteem, and body image including moderating effects. It is well-established that the biosystem construct of body mass index (BMI) is associated with body dissatisfaction and preoccupation, such that the higher one's BMI, the greater one's body image disturbance (Paxton, Eisenberg, & Neumark-Sztainer, 2006). According to the dual pathway model, the higher one's BMI, the more body preoccupation one may have, because of prevailing sociocultural pressures to be thin. This renders many women not only dissatisfied with their weight, but excessively preoccupied with their physical appearances if their bodies do not fit the thin ideal. Self-

esteem buffers the impact of sociocultural pressure to be thin on body preoccupation (Phan & Tylka, 2006), and interventions which raise self-esteem make women less vulnerable to internalization of the thin ideal and subsequent body dissatisfaction (O'Dea, 2004). Likewise, individuals with high self-esteem may be less likely to internalize the sociocultural pressures for thinness that typically fuel the positive relation between BMI and body preoccupation. In other words, the positive relation between BMI itself and body preoccupation may be reduced for those with high self-esteem. This may further explain the complex interplay between sources of body preoccupation among college women. However, a review of the current literature revealed no tests of this moderating hypothesis.

Body mass index, race, and self-esteem. A recent national study assessed women's BMI, their self-esteem, and whether and by how much they perceived themselves to be overweight. The researchers categorized individuals as either overweight (BMI percentile greater than or equal to 85) or not overweight (BMI percentile lower than 85), and found that perceptions of being overweight significantly predict self-esteem, regardless of one's actual BMI category (Perrin, Boone-Heinonen, Field, Coyne-Beasley, & Gordon-Larsen, 2010). Also, significant differences emerged by racial group. Among White American women who were not overweight, perceptions of being overweight were associated with low self-esteem, and this relation was consistent across all women with BMI percentiles lower than 85. However, this correlation was only found among Black women with BMIs between the 20^{th} and 85^{th} percentiles, and among Asian women with BMIs between the 60^{th} and 85^{th} percentiles. Among White American and Black women who were overweight, accurate perception of being overweight was

associated with lower self-esteem, with no such relation among Asian women. These results raise the question of whether the associations between BMI, self-esteem and body image may follow different patterns across different racial or ethnic groups because of variations in sociocultural pressures for thinness. Rather than simply comparing cross-group differences, it is crucial to consider the degree to which individuals feel a dedication to the group and belongingness as group members. For this we turn to the variable of ethnic identity, especially given that self-esteem and ethnic identity development are so closely related.

Review of Outcome Variables

Social Anxiety and Fear of Negative Evaluation

Background. As noted in the bioecological framework and dual pathway, body objectification, and multidimensional models, disorders along the anxiety spectrum repeatedly and consistently emerge as correlates of body image disturbance. For instance, neuroticism is one aspect of negative affect highlighted by Tylka and Subich (2004) in their test of the multidimensional model, and appearance-related anxiety is a key construct in the body objectification model (Fredrickson & Roberts, 1997). The emphasis on appearance-related anxiety as a condition detrimental to the overall well-being of young women, as well as the inherently social nature of body image development and pathology, highlight the importance of evaluating how the social aspects of anxiety development co-occur with body image development. In this section, social anxiety will be defined, and related to body image, self-esteem, and ethnic identity. Following this, fear of negative evaluation, as a specific subcomponent of social anxiety will be defined and described as one of the outcome variables in the current study. Research on the

relations between fear of negative evaluation and self-esteem, BMI, and body preoccupation will be presented.

As briefly mentioned earlier, social anxiety often arises through genetic factors, which predispose individuals to suffer from social fears, restrictive behavior, and subsequent avoidance of social interactions. Such behavior reinforces social fears and inhibits the development of a positive self-concept. Individuals with social anxiety may develop chronic negative assumptions about the self and the world, further contributing to their symptoms. They are thus more concerned with perceptions of how others see them than are non-socially anxious individuals (Blanco, Garcia, & Liebowitz, 2004).

In certain cultures and in the United States, stereotypical female roles include demonstrating fearfulness and anxiety, and society socializes girls to enact these behaviors. This may explain why women outnumber men in the diagnosis of social anxiety disorder. Cross-cultural studies may help further this understanding of ecological and dimensional components of social anxiety, which may be differentially defined and experienced by members of different cultures in the United States (Seedat & Nagata, 2004).

Social anxiety and body image. Both women with anorexia and women with bulimia have a high prevalence of comorbid social anxiety disorder, with the onset of social anxiety symptoms preceding their disordered eating more than 75% of the time (Muller, Koen, & Stein, 2004). Experts in the field emphasize the importance of further research on the link between social anxiety and body image, citing that symptoms along the spectrum of social anxiety become a pervasive and considerable impairment for women who are dissatisfied with their bodies, even after controlling for their BMIs

(Pruzinsky & Cash, 2002). Among college students, social anxiety, as a type of negative affect, may be a crucial component of the negative affect cited in the dual pathway model, as social anxiety is a robust predictor of college student functioning and well-being, even apart from body image concerns (Parade, et al., 2009). Therefore, it is important to assess the predisposing factors for social anxiety, as this construct may be a fundamental link between body image development and later eating pathology, depression, substance use, and other forms of maladaptive coping.

Self-esteem and social anxiety. Theoretically, self-esteem is key in the development of social anxiety, because as adolescents recognize that they fall short of the standards of their ideal selves, they may try to change themselves to meet those standards. An inability or failure to resolve apparent inconsistencies in behavior or self-concept will lead to lower self-esteem (Elliott, 1986). Adolescents, who are already intensely aware of the perceptions and evaluations of others, may become socially anxious because they feel that their flaws will be known to the general public, and are still quite vulnerable to internalizing the evaluations of esteemed peers. Notably, self-esteem partially mediates the relation between both social and friendship alienation and social anxiety (Bosacki, Dane, & Marini, 2007). Individuals may come to rely on fears and perceptions of how others see them than on a stable sense of positive self regard. Macrosystemic considerations are also relevant here. Among women, endorsement of cultural roles of femininity predispose them to lower self-esteem, which then leads to higher social anxiety (Brook & Schmidt, 2008). Self-esteem is a variable in the multidimensional models and leads to body image disturbance, and social anxiety is a type of negative affect, which is hypothesized to result from body image disturbance in

the dual pathway model. However to date, neither model has accounted for the potential links between self-esteem and social anxiety. Testing their association in these models is an important question, given their high degree of association and comorbidity with body image disturbance. In other words, body image disturbance may mediate the relation between self-esteem and social anxiety.

Ethnic identity, self-esteem, and social anxiety. Recall that ethnic identity may foster a sense of social support, and that social support from friends is an especially salient predictor of well-being, body satisfaction, and lower social anxiety among college women, as evidenced in multidimensional models. It follows that self-esteem may mediate the relation between ethnic identity development and social anxiety, although very few studies have tested this link, and no studies to date have compared the feasibility of such a model among members of different racial groups. Limited research implies that identity achievement and exploration do lead to lower social anxiety and lower avoidance (Coleman & Carter, 2007). In one of the few studies on this topic, a validated racial identity leads to lower fear of negative evaluation among biracial individuals, presumably because those with a validated identity experience less internalization of societal prejudices and increased family and peer support (Coleman & Carter, 2007).

Fear of negative evaluation. Social anxiety is made up of three components of experience and behavior: distress, discomfort, and anxiety in social situations, purposeful avoidance of social situations, and fear of receiving negative evaluations from others (Watson & Friend, 1969). Of the three subcomponents of social anxiety, fear of negative evaluation is the most strongly tied to body image concerns among young women. A recent study was the first to test the association between social anxiety, fear of negative

evaluation, and attitudes regarding weight and dieting (Wonderlich-Tierney & Vander Wal, 2010). These researchers discovered that attitudes regarding weight and dieting were not related to overall social anxiety, but were significantly and moderately associated with fear of negative evaluation, indicating this subcomponent of social anxiety may be the most important component as related to body image problems (Wonderlich-Tierney & Vander Wal, 2010). In one study among first-year college students, fear of negative evaluation during students' first week at college predicted second-semester increases in drive for thinness, above and beyond the effects of BMI, self-esteem, depression, and anxiety, and first-week self-esteem predicted increases in body dissatisfaction at the start of the second semester (Gilbert & Meyer, 2005a). Authors concluded that upon arrival to college, individuals with fears of negative evaluation will engage in restricted eating in order to raise their self-esteem and social status and subsequently lessen their fear of negative evaluation (Gilbert & Meyer, 2005a). Such findings imply an association between self-esteem, body image, and the social anxiety sub-component of fear of negative evaluation (Gilbert & Meyer, 2005b), but do not specifically test directional influences between self-esteem and fear of negative evaluation.

Self-esteem and fear of negative evaluation. According to current understanding of social anxiety development, evaluating oneself negatively may result in an increased fear that others will also do so, and this expectation may create significant anxiety in social situations (Leary & Kowalski, 1995). In fact, fear of negative evaluation mediates the relation between self-esteem and social anxiety (Kocovski & Endler, 2000). Lower self-esteem may also predispose to greater fear of negative evaluation among individuals who do not have full threshold social anxiety disorder but instead exhibit symptoms of

shyness (Koydemir-Özden & Demir, 2009). Again, few studies have addressed these links, and these associations have not been tested within the other relations proposed within the aforementioned bioecological and sociocultural models.

BMI, body preoccupation, and fear of negative evaluation. Research is equivocal on the hypothesis that a BMI which is inconsistent with sociocultural ideals leads directly to social anxiety and, more specifically, fear of negative evaluation, with some studies indicating that obese and overweight women are at higher risk for social anxiety disorder, with others finding no association between BMI and social anxiety symptoms (Barry, Petry, Pietrzak, & Wagner, 2008; Mayer, Muris, Meesters, & Zimmermann-van Beuningen, 2009; Schutz & Paxton, 2007). Body and weight preoccupation, however, may vary as a result of one's BMI, and body preoccupation is significantly associated with fear of negative evaluation (McClintock, 2001). Therefore, it may be that BMI alone is not directly related to fear of negative evaluation, but that body preoccupation fully mediates the relation between BMI and fear of negative evaluation. Fear of negative evaluation is a type of negative affect, thus, these paths are predicted by Stice's dual pathway model (1994), which posits that one's BMI, if higher than preferred by certain sociocultural standards, may lead to body image disturbance, which leads to various forms of negative affect. However, these specific relations have not yet been tested, nor have they been assessed with a measure of body preoccupation that accounts for the social nature of appearance concerns.

Social Physique Anxiety

Background. Social physique anxiety represented the second of two outcome variables in the current study, and was examined as a mediator variable. The current

section defines social physique anxiety and describes its relevance to the current study, then describes research delineating how social physique anxiety relates to self-esteem, BMI, ethnic identity, and fear of negative evaluation. Social physique anxiety occurs when individuals feel anxious or self-conscious about their physical appearances while in social situations (Hart, et al., 1989). Social physique anxiety is a type of social anxiety, in which individuals fear embarrassment or are embarrassed by social situations in which their bodies will be scrutinized by others (Hart et al., 1989). In addition to being a type of social anxiety, social physique anxiety is also a specific measure of body preoccupation and appearance anxiety, or the degree to which one's appearance is salient and important and causes worry and concern. Highly correlated with body dissatisfaction and moderately correlated with social anxiety, this measure addresses dissatisfaction with one's physical self in public situations (Hart et al., 1989; Lantz, Hardy, & Ainsworth, 1997; McAuley, Bane, & Mihalko, 1995). Social physique anxiety leads to reluctance to engage in healthy exercise, a serious concern given the current obesity epidemic in the United States (Brunet & Sabiston, 2009).

Although the importance of assessing social physique anxiety among individuals of minority cultures has been proposed, this variable has rarely been used to assess the degree to which bioecological variables interact and mediate in the development of body image concerns and related social anxiety among various ethnic groups (Russell, 2002; Russell & Cox, 2003). Because researchers have hypothesized that body image concerns are largely affected by macrosystemic influences such as sociocultural norms, it is worthwhile to assess physical self-consciousness among individuals of different cultures.

More specifically, ethnic identity, self-esteem, and BMI may predict the fear of negative evaluation and social physique anxiety of individuals of various ethnic minority groups.

Because BMI, self-esteem, and ethnic identity predict body preoccupation in general, they should also predict this specific and socially-relevant form of body preoccupation. In fact, the body objectification model (Fredrickson & Roberts, 1997) reveals that appearance-related anxiety is a crucial component of body image concerns, and the dual pathway model (Stice, 1994) posits that such body image concerns would lead to negative affect, one form of which is fear of negative evaluation. Despite recent encouragement to include social physique anxiety in comprehensive models of body image and social anxiety development, research is still sparse in this area.

Social physique anxiety and self-esteem. As described earlier in the multidimensional model of eating disorder symptomatology, self-esteem significantly predicts body preoccupation and research likewise indicates that self-esteem predicts social physique anxiety. Among adolescent girls, self-esteem may significantly influence the development of social physique anxiety, such that lower self-esteem predisposes to one to higher social physique anxiety (Brunet, Sabiston, Dorsch, & McCreary, 2010; Koyuncu, Tok, Canpolat, & Catikkas, 2010). Further, longitudinal research indicates that changes in global self-esteem lead to changes in social physique anxiety over late adolescence (Crocker, Sabiston, Kowalski, McDonough, & Kowalski, 2006). This is consistent with body objectification and dual pathway theories contending that as adolescents recognize that they fall short of thin-ideal standards, they may try to change themselves to meet those standards. An inability or failure to resolve inconsistencies in

their physical self-concept will lead to lower self-esteem and subsequent social anxiety about making one's physical flaws and deficits known to others.

Social physique anxiety and BMI. Previous research has implied the importance of assessing and controlling for body composition as related to social physique anxiety (Eklund & Crawford, 1994). Research suggests that BMI is consistently and significantly related to social physique anxiety and remains so throughout adolescence and young adulthood (Crocker, et al., 2006; Crawford & Eklund, 1994; Eklund & Crawford, 1994). According to the dual pathway model, it is important to control for BMI in analyses of body preoccupation, because the degree to which women have body preoccupation may vary due to actual physical appearance or other sociocultural and interpersonal influences.

Social physique anxiety and ethnic identity. Perceived discrepancy between ideal and actual weight predicts body dissatisfaction among both White and Black American women, but it predicts social physique anxiety only for White women (Russell & Cox, 2003). Authors suggest that while members of all racial groups may be dissatisfied with their weight, cultural factors may function to exacerbate excessive body preoccupation, especially the social presentational concerns measured by social physique anxiety. Again, as Phinney (1992a) states, an individual's race does not automatically indicate the degree to they identify with and find meaning within membership of a specific group. No studies to date have assessed the role of ethnic identity in the development of social physique anxiety, despite recommendations within the literature (Russell & Cox, 2003). Phan and Tylka's findings from their tests of the multidimensional model of eating disorder symptomatology (2006) indicate that self-

esteem will fully mediate the relation between ethnic identity and a measure of body preoccupation such as social physique anxiety. However, if cultural factors do exacerbate excessive body preoccupation among particular ethnic groups, one would expect to find a direct path from ethnic identity to social physique anxiety for those ethnic groups, as Phan and Tylka (2006) originally predicted.

Social physique anxiety and fear of negative evaluation. Likewise, a thorough literature review revealed no published studies assessing whether social physique anxiety might lead to either social anxiety or fear of negative evaluation. In other words, can a significant amount of one's fear of negative evaluation be predicted by anxiety about public scrutiny of one's physique? According to the dual pathway model, negative affect is a crucial outcome of body image concerns, and the body objectification model highlights that the most relevant body image concerns to college student well-being is appearance anxiety. A thorough literature review reveals that no research to date has measured the association between social physique anxiety and fear of negative evaluation while simultaneously controlling for their associations with self-esteem and BMI. Self-esteem and BMI overlap substantially with fear of negative evaluation and social physique anxiety, respectively, therefore potentially obscuring true relations between these two measures of anxiety in social settings.

CHAPTER III

Statement of the Problem

Upon transitioning to college, young women are at a particularly vulnerable time for developing social anxiety and body image concerns. Among college women, social anxiety and body image are moderately correlated, and social anxiety may be a consequence of body image concerns (Pruzinsky & Cash, 2002). Both social anxiety and body image problems are on the rise among Black American, Asian American, and White American women, and these women may be especially vulnerable to their development when transitioning to college for their first year (Cooley, et al., 2007; Hudson, et al., 2007). The main goal of the current study was to enhance the prediction and understanding of both social anxiety and body image, as measured among a diverse group of young women entering their first year of college. Bronfenbrenner's bioecological framework provided an overarching structure for the current study, because it addresses the myriad of systems and contexts involved in body image and social anxiety development.

Body image is defined as one's cognitions, affect, behavior, distortions, and opinions concerning one's whole body, parts of one's body, others' perceptions of one's body, and one's fitness and strength (Wertheim, et al., 2009), and is a significant predictor of the mental and physical health of college women (Wertheim, Paxton, & Blaney, 2008). Social anxiety is related to the development of body image problems, also carries severe mental and physical health consequences, and is particularly prevalent among women and in college-aged populations (Strahan 2003; Blanco et al., 2004). Social anxiety is infrequently studied as an outcome of body image problems however emerging research

suggests that certain elements of social anxiety such as fear of negative evaluation, are particularly relevant for understanding the comorbid presentation and parallel development of body image problems and social anxiety (Wonderlich-Tierney & Vander Wal, 2010).

The body image literature has been characterized by a lack of theoretical synthesis and a lack of integration of the variables most pertinent to the precursors and consequences of body image development (Fisher, 1990; Pruzinsky & Cash, 2002). Therefore, a major aim of the current study was to use Bronfenbrenner's bioecological framework to identify and synthesize research and models of both body image and social anxiety development in order to identify common variables that relate to these two constructs. These include body mass index (BMI), self-esteem, and ethnic identity. However, Bronfenbrenner's bioecological framework is not specific to body image and fear of negative evaluation development, nor does it provide specific mediation or moderation hypotheses of the interrelations between the predictor variables and outcomes. Therefore, three models of body image development are used to supplement the perspective put forth by Bronfenbrenner's bioecological framework. Each contributes one or more unique predictions about the aforementioned variables and these predictions subsequently guide the design of a new bioecological model of body image development (see Figure 6). Specifically, the body objectification theory model (Fredrickson & Roberts, 1997), the dual pathway model of eating disorder pathology (Stice, 1994), and the multidimensional model of eating disorder symptomatology (Tylka & Subich, 2004; Phan & Tylka, 2006) were the three models used to guide the current study in the

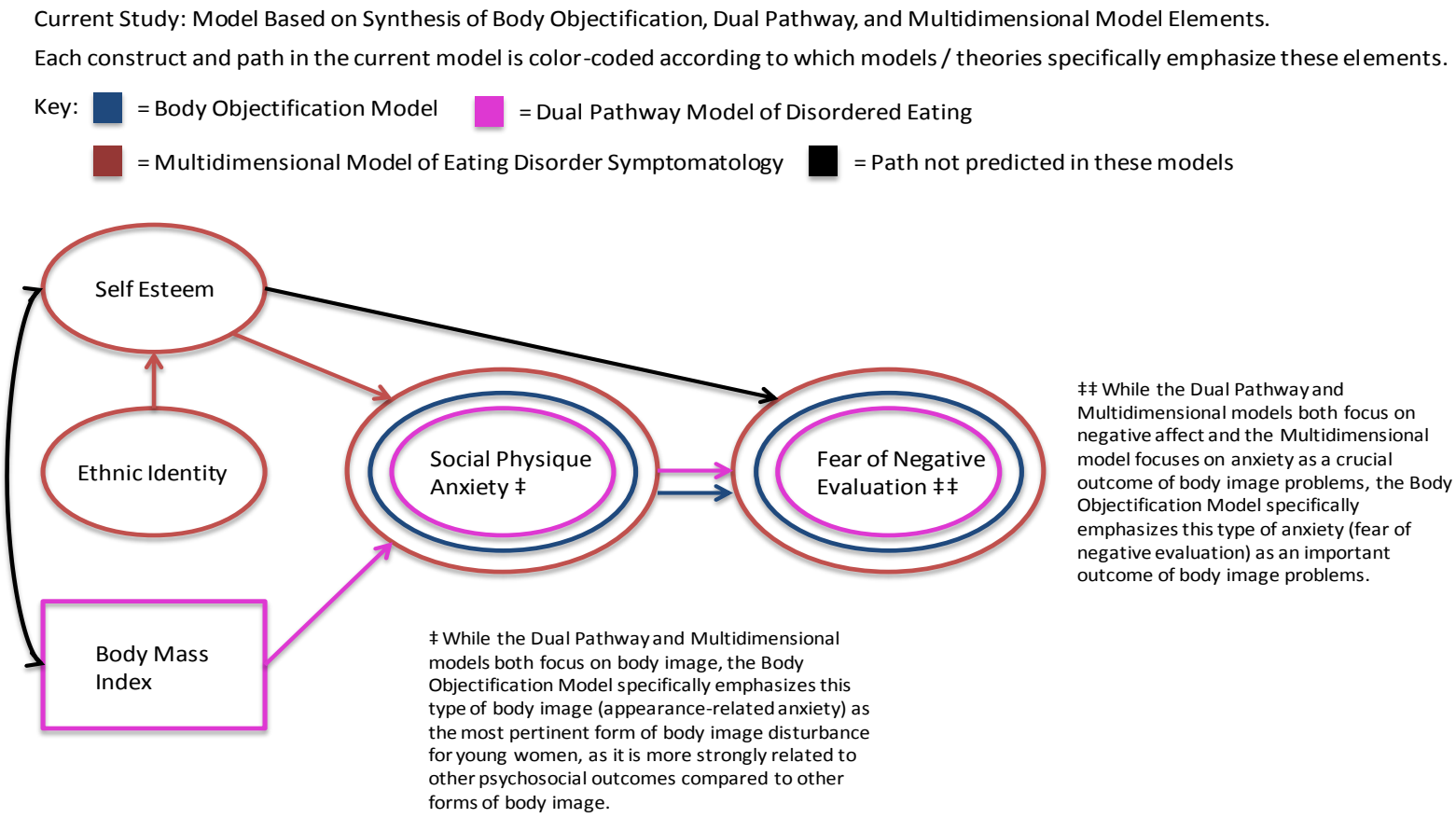
selection and prediction of variables and their interrelations within the new bioecological model.

The body objectification theory model suggests that body image develops from the influence of sociocultural norms and values and highlights the importance of assessing body preoccupation, specifically appearance anxiety, as a type of body image relevant to young women. Therefore, the current study used social physique anxiety as a measure of body image, but one which also specifically assessed that aspect of body image known as appearance anxiety. Bronfenbrenner's bioecological framework guides the current review in the selection of fear of negative evaluation as an intrapsychic component of negative affect and social anxiety. The dual pathway model specifically posits that negative affect is an outcome of body dissatisfaction. Therefore, fear of negative evaluation was chosen as an important measure of the type of social anxiety most impacted by body image problems. Therefore, appearance anxiety was thought to be a predictor of fear of negative evaluation in the current study.

The dual pathway model additionally incorporates BMI as a key predictor of body image concerns, but this predictor is rarely assessed in tests of either the body objectification model or the multidimensional model of eating disorder symptomatology. Therefore, BMI was incorporated into the new bioecological model in order to control for its potentially confounding effects, but also to assess the complex relations between BMI and social physique anxiety.

Furthermore, the multidimensional model of eating disorder symptomatology posits self-esteem as both a predictor of body preoccupation and as a moderator of sociocultural pressure for thinness on body preoccupation. As such, the current study

Figure 6.


Current Study: Model Based on Synthesis of Body Objectification, Dual Pathway, and Multidimensional Model Elements.
Each construct and path in the current model is color-coded according to which models / theories specifically emphasize these elements.
Key:
= Body Objectification Model
= Dual Pathway Model of Disordered Eating
= Multidimensional Model of Eating Disorder Symptomatology
= Path not predicted in these models
Self Esteem
Ethnic Identity
Body Mass Index
Social Physique Anxiety ‡
Fear of Negative Evaluation ‡‡
‡ While the Dual Pathway and Multidimensional models both focus on body image, the Body Objectification Model specifically emphasizes this type of body image (appearance-related anxiety) as the most pertinent form of body image disturbance for young women, as it is more strongly related to other psychosocial outcomes compared to other forms of body image.
‡‡ While the Dual Pathway and Multidimensional models both focus on negative affect and the Multidimensional model focuses on anxiety as a crucial outcome of body image problems, the Body Objectification Model specifically emphasizes this type of anxiety (fear of negative evaluation) as an important outcome of body image problems.

incorporated self-esteem in the new bioecological model and also tested whether self-esteem may also moderate the positive relation between BMI and social physique anxiety. Self-esteem has also been predicted as a precursor to fear of negative evaluation, and this relation was also hypothesized in the new bioecological model (Harter, 2006; Kocovski & Endler, 2000).

Also in an effort to better predict social physique anxiety, another aim of this study was to more closely assess its relation with BMI. It is suggested that BMI is a significant and meaningful predictor of body image, but many studies of social physique anxiety do not measure the BMI of participants (Stice, 2002a), nor do they assess whether the pattern of relation between social physique anxiety and BMI is best described by a linear slope or one with one or more inflexion points (e.g. a quadratic or cubic relation). This research question was addressed in the current study.

Most of the aforementioned research in the area of body image has been performed with only White American participants. Between-group assessments that have not measured cultural variables such as ethnic identity may inaccurately conclude that racial minority women are impervious to body image problems. Given that very few models of either body image or fear of negative evaluation development have been tested among individuals of ethnic minority groups, let alone compared across groups, it is imperative that researchers assess the viability of these models across racial groups. The current study addressed the aforementioned limitations by moving beyond Black-White American between-group assessments to test for model invariance among these three racial groups which have all suffered from adverse consequences of adjustment difficulties in college that stem from body image disturbance and social anxiety. Such

model testing could allow clinicians and researchers alike to understand both how and why these conditions develop among college students entering racially diverse campuses. It can also allow for future replication with longitudinal designs, tests of alternative and potentially equally-viable models, and ultimately suggest strategic points of intervention.

Given that many of the aforementioned models predict that sociocultural influences fuel the development of body image problems and their consequences, and because cross-racial comparisons of these models are relatively rare, it was important to look more closely at the role of race, ethnicity, and ethnic identity in the development of both body image and social anxiety. Bronfenbrenner's bioecological framework can reorient the field to the ubiquitous macrosystemic level influences on body image and provides the impetus for the current study's emphasis on race and ethnic identity. Regarding ethnic identity, this variable has been found to play a limited role in the development of body image concerns among Asian American women, and self-esteem fully mediates the relation between ethnic identity and body preoccupation (Phan & Tylka, 2006). This finding questions the true role that ethnic identity plays in the development of appearance-related evaluative anxiety, apart from its relation with self-esteem. These results support the views of researchers who argue that no ideal female body standards are inherently protective, regardless of their cultural source. Thus, the current study aimed to assess the degree to which ethnic identity exploration and commitment accounted for variance in social physique anxiety and fear of negative evaluation when self-esteem was controlled. The new bioecological model with ethnic identity was also tested across White, Black American, and Asian American groups. Because White American women tend to score lower on ethnic identity exploration and

commitment and may have less of a relation between ethnic identity and self-esteem, it was explored whether the strength of these paths were significantly different between racial groups. In conclusion, a bioecological framework guides the current study in the review, selection and synthesis of the most pertinent aspects of the dual pathway, body objectification, and multidimensional models, and guides the current study in the selection of the population of interest.

Statement of Hypotheses and Research Questions

Purpose 1: The first purpose of this study was to investigate whether self-esteem may moderate the relation between BMI and social physique anxiety. Specifically, high self-esteem would reduce the hypothesized positive relation between BMI and social physique anxiety. This hypothesis was based on the dual pathway (Stice, 1994) and multidimensional model (Tylka & Subich; Phan & Tylka, 2004) propositions that women with higher self-worth are less likely to internalize sociocultural pressures to attain and maintain a certain body weight. It was also based on the tenet of the body objectification model (Fredrickson & Roberts, 1997) that women who do not internalize these values experience less appearance anxiety than women who do internalize them, and on the findings of the multidimensional model (Phan & Tylka, 2006) which suggests that high self-esteem reduces the positive relation between sociocultural pressure for thinness and body preoccupation. This moderation was proposed to occur independently of the relations proposed in other aspects of the current models (Phan & Tylka, 2006); therefore it was tested in a separate analysis.

Hypothesis 1a: Self-esteem would moderate the hypothesized positive relation between BMI and social physique anxiety, such that the relation would be reduced for

women with high self-esteem. This hypothesis was tested separately for Black American, Asian American, and White American women.

Purpose 2: The second purpose of this study was to investigate whether a bioecological perspective could predict social physique anxiety and fear of negative evaluation among a sample of women entering their first year of college. As previously discussed, each hypothesis proposed in this model was tested separately for Black American, Asian American, and White American women. Analyses were conducted to examine overall model fit for each group of women and the magnitude and direction of path coefficients using path analysis in Mplus (Muthén & Muthén, 2010). Most paths were specifically proposed by prior bioecological models of body image development and the remainder were exploratory, although based on previous theory and empirical research on the development of self-esteem and fear of negative evaluation. For purposes of clarity, relations which have been posited by previous bioecological models are noted as such below.

Hypothesis 2a: Self-esteem would be negatively associated with social physique anxiety. S*ee Figure 1 – path a; tests relation between self-esteem and body preoccupation previously predicted in the multidimensional model of eating disorder symptomatology (Tylka & Subich, 2004; Phan & Tylka, 2006).*

Hypothesis 2b: BMI would be positively associated with social physique anxiety. *See Figure 1 – path d; tests relation between BMI and body image disturbance previously predicted in dual pathway model, which posits that for women who internalize sociocultural pressure for thinness, the higher one's BMI, the more one will experience various forms of body image disturbance such as social physique anxiety (Stice, 1994).*

Hypothesis 2c: Self-esteem would be negatively related to fear of negative evaluation.

Hypothesis 2d: Social physique anxiety would be positively associated with fear of negative evaluation. *See Figure 1 – path c; tests dual pathway model (Stice, 1994) predictions of the positive relation between negative affect such as fear of negative evaluation and types of body image disturbance such as social physique anxiety.*

Hypothesis 2e: The sum of all the specific indirect and direct effects between BMI and fear of negative evaluation (i.e., from BMI to fear of negative evaluation through social physique anxiety) would be positive.

Hypothesis 2f: The relation between self-esteem and fear of negative evaluation would be partially mediated by social physique anxiety. This is because poor self-esteem makes women vulnerable to social physique anxiety, and social physique anxiety is proposed to lead to broader fears of negative evaluation (Stice, 1994). Additionally, poor self-esteem would lead directly to general fears of negative evaluation because evaluating oneself negatively may result in an increased fear that others will also do so. *See Figure 1 – paths a, b, and c.*

Hypothesis 2g: The relation between BMI and fear of negative evaluation would be fully mediated by social physique anxiety. *See Figure 1 – paths d and c.*

Additional Exploratory Analyses

Purpose 3: The third purpose of this study was to investigate whether ethnic identity predicted any unique variance in the outcomes of interest. This replicated Phan and Tylka's (2006) procedure of adding ethnic identity into the multidimensional model of eating disorder symptomatology among Asian American women. As previously

discussed, each hypothesis proposed in this model was tested separately for Black American, Asian American, and White American women.

Research question 3a: Would ethnic identity exploration relate to self-esteem for all three racial groups?

Hypothesis 3a: Ethnic identity commitment would be positively associated with self-esteem for all three groups, but less so for the White American group than any other racial group. *See Figure 1 – path e; tests relation between ethnic identity and self-esteem previously posited in Phan and Tylka's (2006) multidimensional model.*

Hypothesis 3b: Self-esteem would fully mediate the relation between ethnic identity exploration and social physique anxiety and between ethnic identity commitment and social physique anxiety. *See Figure 1 – paths e and a; tests relation between ethnic identity, self-esteem, and body preoccupation previously found in Phan and Tylka's (2006) multidimensional model. Social physique anxiety was used as the measure of body preoccupation.*

Research question 3b: Would self-esteem fully or partially mediate the relation between ethnic identity exploration and fear of negative evaluation and between ethnic identity commitment and fear of negative evaluation? *See Figure 1 – paths e, b, and g.*

Purpose 4: The final purpose of this study was to test whether the relation between Body Mass Index (BMI) and social physique anxiety was linear. According to Stice (1994), most women internalize sociocultural pressures for thinness, and this internalization causes women with higher BMIs to experience greater body image disturbance than do women with lower BMIs. This means that social physique anxiety, as a type of body image disturbance, should be positively associated with BMI. However, it is not known

whether the pattern of relation between social physique anxiety and BMI is best described by a linear slope or one with one or more inflexion points (e.g. a quadratic or cubic relation).

Research question 4a: Was the relation between social physique anxiety and BMI non-linear for Black American, Asian American, and White American women, when assessed separately for each group? Proponents of bioecological theories that consider the role of race and ethnicity (e.g., Root, 2001) hypothesize that women of color may be less likely than White women to internalize White American sociocultural pressures for thinness and they may instead internalize the more diverse and less-stringent ideal BMIs of their ethnic groups. Conversely, other researchers (e.g., Poran, 2006) argue that all racial and ethnic groups exert pressure on women to conform to standards of thinness, although these specific standards may differ between racial groups. This suggests that measures of body image disturbance such as social physique anxiety may be related to BMI for all races, albeit in different patterns between races. Therefore, the linearity of the relation between BMI and social physique anxiety was tested separately for Black American, Asian American, and White American women. If cubic or quadratic relations better fit the data, they would be allowed to covary as such in the hypothesized relations of purpose 2 and purpose 3 for each particular group.

CHAPTER IV

Method

This study used self-report data gathered during the 2008 and 2009 administrations of the University of Maryland New Student Census (UMNSC). The UMNSC is an online questionnaire jointly developed and administered by the University of Maryland Counseling Center and the University of Maryland Office of Institutional Research, Planning and Assessment. Both the 2008 and 2009 UMNSC explore experiences, characteristics, attitudes, behaviors, and aspirations of incoming first-year students and contain specific questions assessing demographics, high school experiences, high school/college transition experiences, career and ethnic identity development and psycho-social adjustment. Although the data used in the proposed study was archival in nature, this researcher was part of the team that developed the current survey and therefore had a major role in selecting measures and questions that were contained in both the 2008 and 2009 versions of the survey. The purpose of the UMNSC was to gather information on the educational, career, and personal challenges of incoming first-year students and to use this knowledge to inform student development programming, counseling center services, and internal and external reporting. Therefore, it guided the improvement of the quality of the education, programs and services offered by the University in order to best meet the needs of the undergraduate population. The UMNSC typically takes 30 minutes from start to completion.

Data were collected during June, July, and August of 2008 for first-year students entering the university in the 2008-2009 academic year and June, July, and August of 2009 for first-year students entering the university in the 2009-2010 academic year. The

UMNSC methodology and participant selection are described below. With the exception of Body Mass Index (BMI), both the 2008 and 2009 UMNSC assessed each of the pertinent constructs in the current study. BMI was not assessed in 2009 due to alterations in the census which occur on a yearly basis.

Design Statement

This study used a correlational design because it did not involve manipulation of variables. It examined a bioecological model of fear of negative evaluation and social physique anxiety development among Black American, Asian American, and White American women who were assessed one to twelve weeks before they enter their first year at the University of Maryland (UMD), a large, mid-Atlantic, public university. The proposed study used an existing data set which the current researcher helped design and administer over a period of two years. The current study tested a specific model which was designed to predict both body image and fear of negative evaluation. Within this model was a series of direct and indirect (mediational) pathways between those variables which predict body image and fear of negative evaluation. Additionally, a hypothesis of moderation was be tested. Hierarchical multiple regression analysis was used to test the hypotheses of moderation and quadratic versus linear relations. The latent variable path model was tested using latent variable path analysis with Mplus statistical software (Muthén & Muthén, 2011).

Participants

UMNSC Participant Selection and Procedure. The procedures for recruiting participants for the UMNSC were the same for those who entered the university in Fall 2008 and for those who entered in Fall 2009. All incoming first-year students were

required to attend a two-day orientation to the campus and campus facilities one to twelve weeks before the first day of classes at the university. Orientations were held approximately twice per week throughout June, July, and August prior to the first day of classes, and each student could choose the day that he or she participated. Information about the census project was included on the UMD orientation website and completion of the census was listed as the final step in completing the orientation process. Additionally, all who attended orientation were invited to participate in the UMNSC via email. Students who had transferred to UMD from another school or university were not invited for participation in the census. Also, on each day of orientation, the names and email addresses of all students who attended that particular orientation day were sent from the UMD Orientation Office to the UMD Counseling Center Testing Research and Data Processing Unit and the UMD Office of Institutional Research, Planning, and Assessment. The names and emails of these students were then grouped into batches by census administrators from these offices. Batches approximately adhered to the following system: students who attended orientation in early through mid-June comprised batch 1, late-June through early July comprised batch 2, mid-July through late July comprised batch 3, early August through mid-August comprised batch 4, and late August comprised batch 5. Those students in each batch who had not yet completed the UMNSC approximately two to three weeks after their orientation were sent one email reminding them to complete the census at that point (see Appendix A). At two to three weeks after their first reminder, those in each batch who had not yet completed the UMNSC at that point were sent another email reminder. This process was completed for all batches up until one week before the first day of classes. Approximately one week before the first

day of classes, each student who had not yet taken the census at that point was sent a final reminder (see Appendix B). The online census closed the day before their first day of classes, therefore, no students were allowed to take the UMNSC on or after their first day of classes. In the summer of 2008, all reminders were sent from the UMD Office of Institutional Research, Planning, and Assessment, and in 2009, all reminders were sent from the director of the UMD Counseling Center Testing, Research, and Data Processing Unit. Each student therefore received up to four reminders to complete the UMNSC, by the last week the census was open for use, if they had not yet done so.

In order to complete the UMNSC, students were required to log into the website using their University Identification Number and password which were given to them at orientation and to electronically indicate their agreement to participating in the study upon viewing the consent form (See Appendix C). The final dataset therefore contained the UID of each student, allowing filtering of duplicate responses to the UMNSC (e.g., some students inadvertently took the UMNSC twice). Duplicates were handled by filtering out the response which had less census items completed. At the end of data collection, the UMD Office of Institutional Research, Planning, and Assessment filtered out all individuals who had completed the UMNSC but who were not current students as of the first day of classes (e.g., they already attended orientation but subsequently dropped out or transferred before attending school), and students who had transferred to UMD from another school or university and therefore were not first-year-to-college students. The dataset was de-identified given via compact disc to the director of the UMD Counseling Center Testing Research and Data Processing Unit and placed in a locked filing cabinet. The dataset for the current study was de-identified and stored on a

password-protected computer. Participation was confidential and voluntary and proceeded in accordance with APA ethical guidelines and those set forth by the UMD Human Subjects Review Board. The response rate for 2008 was 50.9% and for 2009 the response rate was 45.0%. In 2008 and 2009, 44.8% and 49.2% of incoming freshman women completed the census, respectively. In 2008 and 2009, the respective response rates by race among female students were 33.0% and 23.7% for Black American, 40.7% and 50.4% for Asian American, and 42.9% and 39.5% for White American. Response rates for 2008 differed significantly by race, $\chi^2(2, N = 1{,}761) = 12.30$, $p = .002$, as did response rates for 2009, $\chi^2(2, N = 2{,}212) = 56.32$, $p < .001$.These rates are consistent with online response rates of UMD census surveys in prior and subsequent years. These rates are also higher than response rates by first-year-to-college women in national online, no-response-incentive surveys with multiple reminders. In one such study these rates averaged at 19.8% with all racial groups combined, and 15.8%, 23.5%, and 20.4% for Black, Asian, and White women respectively (Sax, Gilmartin, & Bryant, 2003).

Participant Subset for the Current Study. Sex of participant was gathered from the UMD Office of Institutional Research, Planning, and Assessment records of the demographics of each student, and only participants who indicated their sex as female were included in the data analysis. When the 2008 and 2009 census samples were combined, 1,785, or 46.0% of the respondents to the census met this criteria. The sample of interest for the current study is first-year-to-college women who identified their race as either Black, African American, Asian American, or White American according to their responses on the UMNSC question asking them to indicate their race (See Appendices D and E). Only non-Latina U.S. citizens who indicated just one of these races were included

in the analyses, because those who are multiracial, identify their ethnicity as Latin-American and/or non-U.S. citizens may share a distinctly different experience of racial identity formation (Rockquemore, Brunsma, & Delgado, 2009), and social anxiety and body image development (Klingaman & Lucas, 2010) than their peers. Of the women who responded to the census in 2008 and 2009, 1,291, or 72.3% meet this criteria. Age of participant was also gathered from the UMD Office of Institutional Research, Planning, and Assessment records of the demographics of each student. Independent samples *t*-tests were conducted comparing those students who responded to the census in 2008 and those who responded in 2009 on the variables of interest. Although the majority of *t*-tests showed significant differences, the effect sizes of the differences between the 2008 and 2009 years on self-esteem $t(1251) = 5.58$, $p < .001$, $d = .32$, ethnic identity $t(1252) = -.78$, $p = .432$, $d = -.04$, social physique anxiety $t(1251) = -4.36$, $p < .001$, $d = -.25$, and fear of negative evaluation $t(1253) = -5.76$, $p < .001$, $d = -.33$ were low as assessed by Cohen's (1988) standards. Therefore, on average, there did not appear to be meaningful differences between the 2008 and 2009 groups on the variables of interest in the current study, supporting the proposed procedure of grouping these two years together in the data analyses.

Missing Item Analysis. If participants were missing either height or weight for the BMI composite variable, their responses were not included in the correlational analysis involving BMI as a predictor. Otherwise, structural equation modeling data analysis strategies used the Full Information Maximum Likelihood (FIML) estimation strategy for all missing data. In other words, FIML directly estimates parameters and standard errors using the observed data, even partially complete cases. Using partially

complete cases, such as those missing BMI, serves to direct the estimation algorithm toward a more accurate set of parameters than if cases missing the BMI variable were simply not included.

Measures

Demographics. Demographic questions assessed age, education level completed by both mother and father, generation status in the U.S., social class, whether English or another primary language were spoken at home, and race, along with brief descriptions and definitions of race as defined in the current study (see Appendices D and E).

Multigroup Ethnic Identity Measure-Revised. The Multigroup Ethnic Identity Measure-Revised (MEIM-R) is a measure of the degree to which one has explored one's ethnic group membership and committed to it. In the current study, the two components of ethnic identity, exploration and commitment were used as predictors of self-esteem, social physique anxiety, and fear of negative evaluation. The MEIM-R was developed and revised by Phinney and Ong to assess one's exploration of and commitment to one's ethnic group (2007). Phinney (2007) and others have conceptualized the construct of ethnic identity to be dynamic, changing over time and context. Ethnic identity involves two components: exploration and commitment. Exploration is the process of actively questioning and seeking to understand the personal meaning of one's ethnicity and ethnic heritage (Phinney, 1992a). Ethnic identity commitment entails a sense of belonging to one's ethnic group, but individuals may or may not have undergone an exploration first (Phinney & Ong, 2007). Typically, exploration and commitment will result in ethnic identity achievement, which involves a sense of dedication to one's ethnic group and a secure sense of being a group member (Phinney & Ong, 2007). Commitment without

exploration is called foreclosure, exploration without commitment is a moratorium, and having low commitment without exploring is ethnic identity confusion. Achievement, foreclosure, moratorium, and diffusion are known as ethnic identity statuses and can be measured with the MEIM-R. In her original theory of ethnic identity development, Phinney posited that ethnic identity development is an ongoing process involving multiple dimensions, including behaviors, feelings of affirmation and belonging to one's group, and achievement (1992a). Inherent in this description was the notion that achieved ethnic identity includes positive feelings about one's ethnic group (Phinney & Ong, 2007). However, other researchers have posited that a person with an achieved sense of ethnic identity may not necessarily hold a positive view toward their ethnic group, suggesting that the positive valence included in some measures of ethnic identity be removed (Umaña-Taylor, Yazedjian, & Bámaca-Gomez, 2004). Therefore, in a 2007 revision of the MEIM, Phinney and Ong removed items from the original 12-item MEIM which assessed positive attitudes. Phinney and Ong also performed a maximum likelihood factor analysis with oblimin rotation and further eliminated items deemed to be poor indicators of their constructs. The resulting measure contains 6 items, with three measuring exploration and 3 measuring commitment, and all 6 items were used in the current study.

Instructions to the MEIM-R request that participants indicate the degree to which they agree or disagree to the statements, according to the ethnic group to which they self-identify. The five response options include *strongly disagree, disagree, neutral, agree,* and *strongly agree.* (coded 1 through 5, respectively). An example of a statement assessing exploration on the MEIM-R is "I have often talked to other people in order to

learn more about my ethnic group" and an example of a statement assessing commitment on the MEIM-R is "I have a strong sense of belonging to my own ethnic group." Scoring the MEIM-R involves totaling the rating for each statement. Items 1, 4, and 5 assess exploration, while items 2, 3, and 6 assess commitment (see Appendices D and E). The authors note that the items representing exploration and commitment can be combined to gauge participants' overall ethnic identity, or analyzed separately. In the current study, participants' scores on exploration and commitment were analyzed separately as measures of exploration and commitment. In the current study, participants' scores on exploration and commitment were analyzed as separate factors. As such, a higher total on exploration indicates higher ethnic identity exploration, and total scores can range from 5 to 15. A higher score on commitment indicates higher ethnic identity commitment, and total commitment scores can range form 5 to 15. In the current study, the three exploration items were used as the three indicators for the factor of ethnic identity exploration, and the three commitment items were used as the three indicators for the factor of ethnic identity commitment.

Phinney and Ong (2007) found that the two-factor model of ethnic identity fit well, in a confirmatory factor analysis of the responses of 241 university students (51% Latino, 26% Asian American, 9% White American, 14% of mixed heritage or other; 78% women and 22% men; 26.5% foreign born; and with a mean age of 19.7 years). Their study yielded Cronbach's alphas of .76 for the exploration subscale, .78 for the commitment subscale, and .81 for the combined subscale. Additionally, Phinney (1992a) demonstrated internal consistency estimates for the original MEIM as high as .81 for high school students and .90 for college samples. For the current study, internal consistency

reliability was .85 for the Asian American, .83 for the Black American, and .91 for the White American groups for exploration and .93 for the Asian American, .88 for the Black American, and .91 for the White American groups for commitment.

Other studies on White American and Black American groups provide evidence of construct validity. For instance, for both White American and Black American adolescents, ethnic identity was significantly and positively associated with coping, mastery, self-esteem, and optimism, salience of ethnicity (Roberts et al., 1999). Also, for both groups, ethnic identity was significantly and negatively associated with loneliness and depression, as expected (Roberts, et al., 1999). Among Black American but not White American high school students, scores on ethnic identity are related to scores on measures of ideological identity (Markstrom & Hunter, 1999). Scores on the MEIM with Asian American and White American adolescents over the course of high school reveals that adolescents do experience fluctuation in ethnic identity that parallel changes in ethnic centrality, proportion of peers of certain ethnicities, and changes in family cohesion (Kiang, Witkow, Baldelomar, & Fuligni, 2010).

Rosenberg Self-Esteem Scale. The Rosenberg Self-Esteem Scale (RSES) is a measure of one's feelings of self-competency and self-liking. In the current study, the variable of self-esteem was conceptualized as a predictor of social physique anxiety and fear of negative evaluation and a mediator of the relations between ethnic identity and both social physique anxiety and fear of negative evaluation. Self-esteem was also tested as a moderator of the relation between BMI and social physique anxiety. The RSES was developed in 1965 in an effort to assess one's sense of self-worth in a unidimensional measure. Since that time, researchers have questioned whether the measure assesses just

one dimension or two dimensions of self-competency and self-liking, which are defined as the experience of oneself as efficacious and able to enact change and the valence of one's valuing of oneself as a person, respectively (Richardson, Ratner, & Zumbo, 2009; Schmitt & Allik, 2005). The debate is currently ongoing (Sinclair et al., 2010). Although researchers have demonstrated adequacy of the two-dimensional model, the unidimensional model of the RSES is more commonly used, and was used in this study.

The RSES contains 10 items and instructions ask participants to indicate the extent to which they agree or disagree with each of the 10 statements. Respondents rate themselves on a 4-point scale, with the options of *strongly disagree, disagree, agree,* and *strongly agree* (coded 1 through 4, respectively). An example of an RSES statement includes "I wish I could have more respect for myself." Scoring the RSES involves totaling the rating for each statement, with items 2, 5, 6, 8, and 9 reverse-scored (see Appendices D and E). Higher totals indicate more self-esteem, and total scores can range from 10 to 40. In the current study, item parceling was used to create a self-esteem factor for use in the models proposed in the current study (Bandalos & Finney, 2001).

The psychometric properties of the RSES have been demonstrated among White and Black American women ages 18-25 (Sinclair, et al., 2010). Among this group of women, Sinclair and colleagues generally found evidence for item discriminant validity with the Participation Measure for Post-Acute Care Social Relationships Scale. Among these two racial groups, adequate internal consistency reliabilities of .89 or higher were found. Notably, Black American participants were more likely than White American participants to score at the ceiling of the measure. Internal consistency for a sample of Asian American and White American college students was .88 (Greenberger, Chen,

Dmitrieva, & Farruggia, 2003). For the current study, internal consistency reliability was .89 for the Asian American, .87 for the Black American, and .90 for the White American groups.

Construct validity indicates that overall RSES scores are negatively associated with anxiety, depression, and stress, and are more strongly associated with mental health than physical health among Black American and White American women (Sinclair et al., 2010). Among a sample of East Asian, Southeast Asian, South Asian, and White American college students, construct validity was demonstrated in that RSES scores were positively correlated with scores on measures of parental warmth and acceptance optimism, and life satisfaction and negatively correlated with scores on depressive symptoms (Greenberger, et al., 2003).

Cross-cultural differences in the factor structure of self-esteem scores have been demonstrated as minimal for Asian American and White American college students (Greenberger, et al., 2003), and invariance across cultural groups has been further demonstrated in cross-national studies conducted across 53 nations, including Asian, Black, American, and White racial groups (Schmitt & Allik, 2005).

Body Mass Index. Body Mass Index (BMI) is an index of one's height in proportion to one's weight and is significantly correlated with direct measures of body fat (Centers for Disease Control and Prevention, 2010). BMI was assessed with two questions asking participants to indicate their height in feet and inches and weight in pounds (see Appendix D). BMI was assessed only among students who were entering the university in the fall of 2008. BMI was calculated by dividing weight in pounds (lbs) by height in inches (in) squared and multiplying by a conversion factor of 703 (CDC, 2010).

According to the Centers for Disease Control and Prevention (2010), individuals with BMIs below 18.5 are classified as underweight, those with BMIs between 18.5 and 24.9 are classified as normal, those with BMIs between 25.0 and 29.9 are classified as overweight, and those with BMIs 30.0 and above are classified as obese. As noted previously, this data was collected for students incoming in 2008 only.

Research on the accuracy of self-reported height and weight consistently indicates that for young adults, both self-reported height and weight are generally accurate when compared with measured height and weight (Nieto-García, Bush, & Keyl, 1990; Kuczmarski, Kuczmarski, & Najjar, 2001). A recent study (Martin, Frisco, & May, 2009) on racial group differences reveals that Black American girls who are overweight are more likely to underestimate their weight than are White Americans, and Black American girls in general are less likely to overestimate their weight than White Americans. Asian American girls are also more likely to underestimate their weight than are White American girls. Additional research indicates that women who do not report their weight on questionnaires are likely to be engaging in motivated non-responding, and are more likely to suffer a negative body image than those who do respond (Tiggemann, 2006). In sum, scores on weight and height are generally reliable with slight racial group differences in estimation of weight and height.

Brief Fear of Negative Evaluation Scale-Short. The Brief Fear of Negative Evaluation Scale (B-FNE-S) measures the degree to which one feels apprehension in situations where there is a likelihood of evaluation by others. Fear of negative evaluation was one of the outcome variables in the current study. Watson and Friend (1969) originally developed the Fear of Negative Evaluation Scale (FNE) as a 30-item self-

report measure of the cognitive and emotional components of social anxiety. The authors designed the scale to measure the extent to which individuals feel apprehensive in situations where others may evaluate them, and the extent to which these individuals desire approval from their peers (Watson & Friend, 1969).

In 1983, Leary composed the Brief-FNE, using 12 of the 30 FNE items with the highest item-total correlations, on a sample of 85 undergraduate college students. All 12 items had at least a .50 item-total correlation with the total FNE scale. Leary also altered the response options from true-false to a 5-point scale, where respondents indicate the degree to which they identify with the 12 statements. More recently, analyses of the factor structure and item properties of the scale indicate that an 8-item version including only the positively-worded items is more reliable and unitary than the 12-item version (Rodebaugh et al., 2004). Therefore, this version (the B-FNE-S) was used in the current study.

Instructions request that participants indicate the degree to which they feel the statements characterize them. The five response options include *not at all*, *slightly*, *moderately*, *very*, and *extremely . . . characteristic of me* (coded 1 through 5, respectively). An example of a statement on the Brief-FNE-S is “Sometimes I think I am too concerned with what other people think of me.” Scoring the Brief-FNE-S involves totaling the rating for each statement (see Appendices D and E). Higher totals indicate more social anxiety, and total scores can range from 8 to 40. Because of the unidimensionality of responses to the Brief-FNE-S, item parceling was used to create a fear of negative evaluation factor for use in the models proposed in the current study (Bandalos & Finney, 2001).

Brief-FNE scores have been found to correlate highly with the original FNE scale ($r = .96$, $p < .0001$), and the satisfactory psychometric properties found in the original FNE scale exist in the Brief-FNE as well (Leary, 1983; Rodebaugh, et al., 2004). Inter-item reliability data for the Brief-FNE indicates a Cronbach alpha coefficient of .90, similar to the Cronbach alpha of .92 for the full-length scale (Leary, 1983). The four-week test-retest coefficient of .75 for the Brief-FNE was higher than the test-retest coefficient of .68 for the original FNE scale (Leary, 1983). For the current study, internal consistency reliability was .94 for the Asian American, .93 for the Black American, and .95 for the White American groups.

Leary (1983) demonstrated construct validity in terms of significant correlations between scores on the Brief-FNE and scores on other measures that assess apprehension of negative evaluations, such as scores on the SAD-anxiety subscale ($r = .35$, $p < .05$), the SAD-avoidance subscale ($r = .19$, $p < .05$), and the Interaction-Anxiousness Scale ($r = .32$, $p < .05$). Leary further supported validity by putting participants in social situations and then assessing their social anxiety with both a two-question interview and the Brief-FNE. Responses to both questions significantly correlated with Brief-FNE scores ($r = .31$, $p < .05$, and $r = .57$, $p < .0001$, respectively).

Leary (1983) also used both versions (original and Brief) of the FNE scale to determine whether they would similarly classify individuals into high and low fearfulness, using median splits. Median splits for both scales indicated that 93% of participants would be similarly classified by both the FNE and Brief-FNE scales. In comparing the Brief-FNE and FNE, Rodebaugh and colleagues (2004) concluded that the shortened version is a more effective measure in discriminating between participants who

fall at both ends of the social anxiety spectrum, correcting ceiling effects typically produced by the FNE.

While several other scales assess social anxiety, the purpose of this investigation is to distinguish between individuals in a non-clinical population who have differing degrees of anxiety in social situations. After a comprehensive literature review, Brief-FNE items appear to be the most likely to be endorsed by individuals of varying anxiety levels, especially compared to items on scales designed to diagnose social phobia.

While ethnic information is not available for the participants involved in the construction and validation of the Brief-FNE, other studies have successfully used the Brief-FNE with both Asian American college students and Black American college students (Norasakkunkit & Kalick, 2002; Philipp, Washington, Raouf, & Norton, 2008). The Brief-FNE has also been shown to correlate significantly with the Social Physique Anxiety Scale (Hart et al., 1989).

Social Physique Anxiety Scale. Social physique anxiety serves as an outcome of self-esteem, ethnic identity, and BMI, and is also hypothesized to serve as a mediator of the relation between self-esteem and fear of negative evaluation and ethnic identity and fear of negative evaluation. The Social Physique Anxiety Scale (SPAS) was developed by Hart, Leary, and Rejeski (1989), to measure a subtype of Social Anxiety. The authors describe social physique anxiety as, “people’s concerns with others’ perceptions of their bodies” (Hart et al., 1989, p. 96). Further, individuals high in social physique anxiety “may be chronically concerned with how others view their physiques, either because their bodies are objectively unattractive or because they hold an unrealistically negative perception of their physiques” (Hart et al., 1989, p. 96). Previous research indicates that

women are especially prone to having significant body-image distortions, and women often worry about how certain parts of their bodies appear to others, regardless of others' perceptions of their attractiveness. The SPAS is the only scale that assesses these cognitive and affective components of body image among individuals of non-clinical populations. Hart et al. (1989) report high inter-item reliability with student samples, with a Cronbach's alpha coefficient of .90, and all 12 item-total correlations at .50 or higher. In 2000, Motl and Conroy further modified the SPAS, finding that the removal of five items significantly improved unidimensional model fit. Therefore, the 7-item version was used in the current study. However, much of the research on validity of scores to the SPAS has been done on the 12-item version. Therefore, this validation research will also be presented in the current section.

The SPAS-7 consists of 7 items, and instructions ask respondents to indicate the extent to which they identify with each of the 7 statements. Respondents rate themselves on a 5-point scale, with the options of *not at all*, *slightly*, *moderately*, *very*, and *extremely . . . characteristic of me* (coded 1 through 5, respectively). An example of an SPAS statement includes "It would make me uncomfortable to know others were evaluating my physique/figure." Scoring the items of SPAS-7 involves totaling the rating for each statement, with item 8 reverse-scored (see Appendices D and E). Higher totals indicate more social physique anxiety, and total scores can range from 7 to 35. Because of the unidimensionality of responses to the SPAS, item parceling was used to create a social physique anxiety factor for use in the models proposed in the current study (Bandalos & Finney, 2001). For the current study, internal consistency reliability was .89 for the Asian American, .89 for the Black American, and .89 for the White American groups.

Construct validity of the 12-item version has been investigated with a sample of 97 young adult college women (Hart, et al., 1989). At alpha levels less than .01, scores on the SPAS correlated significantly and moderately with these participants' scores on measures that assess public self-consciousness, body dissatisfaction, and fear of negative evaluation. Significant positive correlations between SPAS scores and scores on the Interaction Anxiousness Scale ($r = .40$, $p < .01$) and Brief Fear of Negative Evaluation Scale ($r = .47$, $p < .01$) indicate that social physique anxiety as defined by the SPAS is related (but not identical) to the construct of social anxiety among young adult women.

Construct validity has been demonstrated among adolescent gymnasts, with scores on the SPAS inversely associated with scores on measures assessing physical competence and physical self-efficacy among adolescent gymnasts (McAuley & Burman, 1993). Eklund, Mack, and Hart (1996) also investigated construct validity with women who were elite athletes, and both active and inactive college women, through a factor analysis. Individuals' comfort with their bodies, and their fears of negative evaluation were the two factors which emerged, further illustrating construct validity (Eklund et al., 1996). Furthermore, construct validity for the 7-item version has been demonstrated among both physically active and inactive students in college and late high school and club-through elite-level athletes who regularly participated in sports, establishing strong factorial invariance across genders (Motl & Conroy, 2000).

At alpha levels of .05, significant negative correlations between SPAS scores and scores on scales that measure confidence about one's body have also been found (Hart et al., 1989). Scores on the Sexual attractiveness ($r = -.36$), Weight concern ($r = -.82$), and Physical condition ($r = -.79$) subscales of the Body-Esteem Scale, the Body Cathexis

Scale (r = -.58), and Langston's Body Size/Weight Body Cathexis Subscale (r = -.79) demonstrate that the SPAS assesses the anxiety that young women feel about their weight and general physical attractiveness (Hart et al., 1989).

Because public self-consciousness and body dissatisfaction are highly socially stigmatizing areas for women, Hart and et al. (1989) investigated the possibility that young adult women would engage in socially desirable responding on the SPAS. In their study, scores on the SPAS correlated weakly with scores on the Social Desirability Scale (r = -.16), indicating that members of this population do not tend to engage in socially desirable responding on the SPAS (Hart et al., 1989).

Criterion validity was examined by Hart et al. (1989) by having young women take the SPAS, undergo a physical evaluation, and rate their stress, discomfort, and negative thoughts during the evaluation. Women with high scores on the SPAS were more likely to be stressed, uncomfortable, and have more negative thoughts about their bodies during the physical (Hart et al., 1989). Other researchers (Lantz, Hardy, & Ainsworth, 1997; Petrie, Diehl, Rogers, & Johnson, 1996) have further demonstrated construct validity and reliability with this scale. Furthermore, Scott, Burke, Joyner, and Brand (2004) found evidence for 14-day test-retest reliability among a college student sample for the 7-item version. While ethnic information is not available for the participants involved in the construction and validation of the social physique anxiety scale, other studies have successfully used the SPAS and SPAS-7 with Black American and Asian American exercisers and non-excercisers attending college (Isogai et al., 2001; Penkal & Kurdek, 2007; Russell & Cox, 2003).

Procedure

Human subject approval was received from UMD to conduct the UMNSC. As described above, data for the current study were collected as part of this census which is conducted online during the summer prior to the first class of incoming first-year students. The website for the UMNSC displayed the informed consent form and a description of the purposes of the UMNSC (see Appendix C). Students were allowed to quit completing the UMNSC at any time, and were informed of their right to decline participation. The order of the questionnaires in the current study for both the 2008 and 2009 UMNSC is as follows: demographics, self-esteem, B-FNE-S, SPAS-7, and ethnic identity. In the 2008 UMNSC, BMI was added to the survey.

Data Analyses

The design of this study was correlational. All analyses were evaluated at alpha levels of .05(two-tailed) unless otherwise noted, and effect sizes (*r*) were calculated. As noted earlier, data were aggregated by race and examined to ensure that participants who were incoming to the university in 2008 and eligible to be included in the study were not statistically significantly different on the variables in question as compared with participants incoming to the university in 2009 and eligible to be included in the study. Results similarly indicated low effect sizes between average levels on each measure when analyzed within each racial group (see Appendix F). Before analyzing the zero-order correlations, tests of the required assumptions of linearity, normality and homogeneity of variances were examined with visual inspection of the scatter diagrams.

As noted earlier, item parceling was performed with the items on the Brief-Fear of Negative Evaluation scale (B-FNE-S), Rosenberg Self-Esteem Scale (RSES) and the Social Physique Anxiety Scale (SPAS). In other words, in order to reduce the number of

indicators to a factor, scale items were randomly selected to form groups of items, termed parcels. Parcels then served as indicators. Items were randomly selected to form two parcels of three items and one parcel of two items for the B-FNE-S, two parcels of three items and one parcel of four items for the RSES, and one parcel of three items and two parcels of two items for the SPAS. Each participants' averages for each group of items were calculated and each group of items were then treated as one indicator. Therefore, three indicators for a fear of negative evaluation factor were created from responses to the B-FNE-S, three indicators for a self-esteem factor from responses to the RSES, and three indicators for a social physique anxiety factor were created from responses to the SPAS. In the event that a participant was missing responses to one or more items, the "one-half" rule was used (Hancock, 2010, personal communication), meaning that at least half of the items for an indicator must have been present in order to calculate a participants' score on that indicator. In this case, the average score on the completed items became the participants' score for that parcel. If less than half of the items were present, then the participant did have that parcel, and the estimation strategy estimated the model based on the information that did exist from other participants. Full Information Maximum Likelihood was the estimation strategy used for the latent variable path analysis.

CHAPTER V

Results

The current study had four purposes: 1) to test whether self-esteem would moderate the relation between BMI and social physique anxiety, 2) to test a bioecological model of social physique anxiety and fear of negative evaluation, 3) to explore the role of ethnic identity as a predictor in the bioecological model, and 4) to explore whether the relation between BMI and social physique anxiety is linear. Each of these purposes and their specific hypotheses will be addressed in the results section. First, there is a description of the sample selection, data cleaning procedure, and basic demographics. The moderation analysis is then described (addressing purpose 1). Following the moderation analysis is a description of the process of testing the proposed bioecological model with a latent variable path analysis, beginning with the test of the measurement model, then the test of the hypothesized structural model and the alternative fully saturated model, and finally the use of data-driven modifications to increase model fit (addressing purpose 2). Then, hypothesized direct paths and mediation (indirect) paths are tested within each racial group (also addressing purpose 2), as well as the exploratory paths involving the ethnic identity factors (purpose 3). Following this is the test of whether the relation between BMI and social physique anxiety is nonlinear (purpose 4). Finally, because several new questions arose from the data analysis, several additional exploratory analyses were conducted; namely, the nature of the path added in the modification to the proposed model, also whether there are curvilinear relations between BMI and fear of negative evaluation for the Asian American group (post-hoc exploratory analysis 1), and finally whether several paths of interest in the hypothesized structural

model fit more strongly for some racial groups than for others (post-hoc exploratory analysis 2). This last investigation (post-hoc exploratory analysis 2) first required a test of measurement invariance, to determine whether indicators assess their factors equally well in each of the racial groups, and this process is also described in the last section.

Preliminary Analyses

Sex of participant was gathered from the UMD Office of Institutional Research, Planning, and Assessment records of the demographics of each student, and only first-time freshman participants who indicated their sex as female were included in the data analysis. When the 2008 and 2009 census samples were combined, 1,954, or 50.3% of the respondents to the census met this criteria. Response rates for participants by year of entry into UMD are presented in Table 1. Response rates for additional racial groups are presented in Appendix G.

Table 1
Among First-Year-To-College Women, Number and Percent of Census Respondents Who Answered All Items on Each Measure

	Asian American			
Year	2008 (n = 91)		2009 (n = 127)	
	n	*%*	*n*	*%*
Income	85	93	126	99
BMI	67	74	not administered	
Height	76	84	not administered	
Weight	68	75	not administered	
SE	90	99	123	97
SPA	83	91	125	98
FNE	88	97	122	96
EI Exp	89	98	124	98
EI Comm	88	97	124	98

Table 1 (continued)
Among First-Year-To-College Women, Number and Percent of Census Respondents Who Answered All Items on Each Measure

	Black American			
Year:	2008 (n = 110)		2009 (n = 58)	
	n	*%*	*n*	*%*
Income	107	97	55	95
BMI	96	87	not administered	
Height	105	95	not administered	
Weight	96	87	not administered	
SE	108	98	54	93
SPA	107	97	53	91
FNE	106	97	55	95
EI Exp	109	99	55	95
EI Comm	110	100	55	95
	White American			
Year:	2008 (n = 435)		2009 (n = 469)	
	n	*%*	*n*	*%*
Income	412	95	459	98
BMI	370	85	not administered	
Height	406	93	not administered	
Weight	373	86	not administered	
SE	419	96	458	98
SPA	424	97	460	98
FNE	422	97	457	97
EI Exp	423	97	461	98
EI Comm	421	97	460	98

The sample of interest for the current study was first-year-to-college women who identified their race as either Black, African American, Asian American, or White American according to their responses on the Census question asking them to indicate their race (See Appendices D and E). Only non-Latina U.S. citizens who indicated just

one of these races were included in the analyses, because those who are multiracial and identify their ethnicity as Latin-American and/or non-U.S. citizens may share a distinctly different experience of racial identity formation (Rockquemore, Brunsma, & Delgado, 2009), and social anxiety and body image development (Klingaman & Lucas, 2010) than their peers. As noted earlier, the responses on psychosocial measures of those who are multiracial with White as one of their indicated races is highly dependent on what reference group these individuals are using in that particular moment (Lusk, et al., 2010). While some may choose to identify as White, some may choose not to identify as White, or to identify as biracial or multiracial. What races or combinations of races these students happen to identify with at any given time may give rise to differences in the relations between variables of interest in the current study, particularly ethnic identity and self-esteem. Because multiracial students were not asked which of their racial groups they identified with most, their responses were not analyzed in the current study. Statistical power limitations due to sample size constraints also exclude the option of using data from individuals who are multiracial non-White, Latina/o, and international students. Alternatively, the option of expanding the study to include more racial groups by combining data from minority racial groups was considered. However, an analysis of mean differences on variables of interest yielded statistically significant differences between participants of many of the racial groups (see Table 2). Therefore, combining the data of different racial groups could potentially conceal or alter statistically significant findings that would have been revealed if groups were analyzed separately. For these reasons, monoracial Asian, Black, and White American women comprised the samples of the current study and their data were analyzed separately. Of the women who responded

to the census in 2008 and 2009, 1,290, or 66% met the criteria of being monoracial non-foreign Asian, Black, or White American women.

To identify possible univariate and multivariate outliers, visual inspection of the data, scatterplots, and indices of skewness and Mahalanobis Distance were assessed. This identified 33 possible univariate and multivariate outlying cases. Visual inspection of each case's response patterns indicated that six of these cases provided an inappropriate response set. Specifically, these cases engaged in uniform responding (e.g. a response of "4" to every question on the census). One case provided an unrealistic height and weight. Removal of the responses from these seven participants yielded a total of 1,283 participants, thus constituting the current sample.

Participant age ranged from 17 to 19 years (M = 17.83, SD = 0.46).Statistically significant differences were found on participant income by race χ^2 (2) = 62.46, $p < .001$, therefore, income was used as a control variable in all cross-race comparisons. Information about means and standard deviations, and correlations on the measures of interest for each racial group are presented in tables 3-5.

BMI Categories

As described previously, according to the Centers for Disease Control and Prevention (2010), individuals with BMIs below 18.5 are classified as underweight, those with BMIs between 18.5 and 24.9 are classified as normal, those with BMIs between 25.0 and 29.9 are classified as overweight, and those with BMIs 30.0 and above are classified as obese. Among Black American participants, 6.4% were classified as underweight, 69.1% were classified as normal, 16.0% were classified as overweight, and 8.5% were classified as obese. Among Asian American participants, 13.4% were classified as

Table 2
Mean Differences on Measures by Racial Group

	Racial Group						
	Black American	Asian American	Latin American	White American	Multiracial with White as a race	Multiracial non-White	Analysis of Variance
Measure							
FNE	2.22a	2.69b	2.38ab	2.65ab	2.54ab	2.24ab	F (5, 1,458) = 7.22***
EI Exp	3.45bc	3.81c	3.75bc	2.99a	3.32ab	3.52bc	F (5, 1,468) = 3.87***
EI Comm	3.63bcd	3.83cd	3.96d	3.18a	3.23ab	3.54abc	F (5, 1,509) = 30.71***
SE	3.41c	3.07a	3.18ab	3.25abc	3.21abc	3.33bc	F (5, 1,466) = 0.34***
SPA	2.30a	2.75bc	2.87c	2.66abc	2.64abc	2.39ab	F (5, 1,465) = 5.69***
BMI	23.42b	20.92a	20.63a	21.91ab	21.39ab	22.51ab	F (5, 632) = 5.47***

Note. Means of different subscripts indicate significant differences based on Tukey's HSD. BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.
*** $p < .001$.

underweight, 80.6% were classified as normal weight, 6.0% were classified as overweight, and none were classified as obese.

Among White American participants, 7.7% were classified as underweight, 81.1% were classified as normal weight, 8.5% were classified as overweight, and 2.7 % were classified as obese.

Table 3
Means, Standard Deviations, and Correlations for Asian American Sample

Scale	α	*M*	*SD*	SE	SPA	FNE	EI Exp	EI Comm	Income	BMI	Height	Weight
1. SE	.89	3.07	.47	--								
2. SPA	.89	2.75	.91	-.49***	--							
3. B-FNE-S	.94	2.69	.95	-.41***	.53***	--						
4. EI Exp	.85	3.81	.81	.23**	-.09	-.05	--					
5. EI Comm	.93	3.83	.91	.23**	.01	-.05	.77***	--				
6. Income[1]		4.60	1.92	.09	-.11	-.05	.01	-.02	--			
7. BMI		20.92	2.62	.09	.18	-.20	.03	.04	.20	--		
Height (inches)		63.51	2.55	.11	.06	-.16	-.14	-.11	.02	-.17	--	
Weight (lbs)		119.39	16.01	.17	.18	-.25*	-.04	-.01	.15	.81***	.43***	--

Note. n's vary due to missing data. BMI = Body Mass Index; SE = Self Esteem Scale; SPA = Social Physique Anxiety Scale; B-FNE-S = Brief Fear of Negative Evaluation Scale-Short; EI Exp = Ethnic Identity Exploration Subscale; EI Comm = Ethnic Identity Commitment Subscale.
*$p < .05$; **$p < .01$; *** $p < .001$.
[1]Because income is scored as an ordinal variable, Spearman's rho was calculated.

Purpose 1: Test of the Moderation Hypothesis 1a

Hypothesis 1a predicted that self-esteem would moderate the positive relation between BMI and social physique anxiety, such that the positive relation between BMI and social physique anxiety would be reduced by higher self-esteem. Because of the lack of guidance in the literature on testing moderation with latent variable path analysis, a hierarchical multiple regression analysis was performed for each group. Scores on BMI and the Rosenberg Self-Esteem Scale (RSES) entered as predictor variables and scores on the Social Physique Anxiety Scale as the outcome variable. Prior to this analysis, for each

Table 4

Means, Standard Deviations, and Correlations for Black American Sample

Scale	α	*M*	*SD*	SE	SPA	FNE	EI Exp	EI Comm	Income	BMI	Height	Weight
1. SE	.87	3.41	.45	--								
2. SPA	.89	2.30	.96	-.51***	--							
3. B-FNE-S	.93	2.22	.91	-.46***	.52***	--						
4. EI Exp	.83	3.45	.96	.25**	-.31***	-.01	--					
5. EI Comm	.88	3.64	.95	.30***	-.28***	-.10	.74***	--				
6. Income[1]		4.86	1.81	-.11	.06	-.06	.004	.03	--			
7. BMI		23.44	5.04	.09	.49***	.05	-.20	-.15	-.06	--		
Height (inches)		63.31	2.78	-.03	.02	.08	-.008	-.07	-.07	-.002	--	
Weight (lbs)		142.27	33.92	-.09	.45***	.08	-.19	-.18	-.05	.93***	.36***	--

Note. n's vary due to missing data. BMI = Body Mass Index; SE = Self Esteem Scale; SPA = Social Physique Anxiety Scale; B-FNE-S = Fear of Negative Evaluation Scale-Short; EI Exp = Ethnic Identity Exploration Subscale; EI Comm = Ethnic Identity Commitment Subscale.
*$p < .05$; **$p < .01$; *** $p < .001$.
[1]Because income is scored as an ordinal variable, Spearman's rho was calculated.

group, the residuals were plotted against predicted values, to assess assumptions of linearity, normality, and equal variances. Based on a visual inspection of the scatterplots, the assumptions were found to have been met. Before the analysis, to reduce non-essential multicollinearity, both predictors were "centered," by subtracting each predictor's mean from its corresponding scores for that racial group (Aiken & West, 1991). The interaction term was created by computing the product of the predictor's centered scores. In other words, the centered BMI scores were multiplied by the centered RSES scores (BMI X

Table 5

Means, Standard Deviations, and Correlations for White American Sample

Scale	α	*M*	*SD*	SE	SPA	FNE	EI Exp	EI Comm	Income	BMI	Height	Weight
1. SE	.90	3.25	.46	--								
2. SPA	.89	2.66	.94	-.47***	--							
3. B-FNE-S	.95	2.65	.96	-.53***	.56***	--						
4. EI Exp	.91	2.99	1.00	.03	-.02	-.02	--					
5. EI Comm	.91	3.18	.93	.09**	-.05	-.02	.75***	--				
6. Income[1]		5.32	1.80	.05	-.03	-.04	.10*	.08*	--			
7. BMI		21.83	2.91	-.06	.36***	.06	.08	-.02	-.04	--		
Height (inches)		64.89	2.62	.05	.01	.01	-.09	-.07	.07	-.11*	--	
Weight (lbs)		131.03	19.37	-.02	.32***	.05	.03	-.05	-.003	.84***	.44***	--

Note. n's vary due to missing data. BMI = Body Mass Index; SE = Self Esteem Scale; SPA = Social Physique Anxiety Scale; B-FNE-S = Brief Fear of Negative Evaluation Scale-Short; EI Exp = Ethnic Identity Exploration Subscale; EI Comm = Ethnic Identity Commitment Subscale.
*$p < .05$; **$p < .01$; *** $p < .001$.
[1]Because income is scored as an ordinal variable, Spearman's rho was calculated.

self-esteem). On the first step of the multiple regression analysis, centered values of BMI and self-esteem were entered using a forced entry method. On the second step, the interaction term was allowed to enter the equation if it was significant at that step, using the forward method. For the Asian American group, BMI and self-esteem scores explained a significant proportion of variance in social physique anxiety scores $R^2 = .11$, $F(2, 59) = 3.34$, $p < .05$. However, the interaction term was not significant and did not enter in the second step, $t(58) = -.02$, $p = .99$. For the Black American group, BMI and self-esteem scores

explained a significant proportion of variance in social physique anxiety scores R^2 = .46, $F(2, 88) = 3.34$, $p < .001$. However, the interaction term was not significant and did not enter in the second step, $t(87) = -.37$, $p = .71$. For the White American group, BMI and self-esteem scores also explained a significant proportion of variance in social physique anxiety scores $R^2 = .30$, $F(2, 341) = 71.76$, $p < .001$. However, the interaction term was not significant and did not enter in the second step, $t(340) = .98$, $p = .99$. Thus, results failed to support the hypothesis that self-esteem would moderate the relation between BMI and social physique anxiety, for any of the three racial groups.

Purpose 2: Latent Variable Path Analysis

The second purpose of this study was to investigate whether a latent variable path model of social physique anxiety and fear of negative evaluation would fit adequately among a diverse sample of women entering their first year of college. Hypotheses 2a through 2g were assessed with the path model analysis and are described in subsequent sections. The current study followed Byrne's (2006) suggestion of a two-step process of structural equation modeling of the path model. First, a confirmatory factor analysis should be conducted to determine whether the measurement model, which tests whether indicators load appropriately onto only their respective factors, adequately fits the data, for each of the racial groups. Only after the measurement model is supported is it appropriate to test the specific paths hypothesized in the structural model. In the current study, four fit indices were used to determine the degree of goodness of fit for each model, as recommended by Hu and Bentler (1999). These include the comparative fit index (CFI; values of .95 or greater indicate adequate fit to the data), the Tucker-Lewis Index (TLI; values of .95 or greater indicate adequate fit to the data), the root-mean-

square-error of approximation (RMSEA; values of .06 or lower indicate adequate fit to the data), and the standardized root-mean-square residual (SRMR; values of .08 or lower indicate adequate fit to the data). The MLR chi-square test statistic, appropriate for use with Full-Information Maximium Likelihood estimation strategies, was used as a robust estimator in the current analyses and is equivalent to the Satorra-Bentler chi-square (Asparouhov & Muthén, 2005). If the scaling correction factor produced for MLR is different from 1.00, this signifies that the assumption of multivariate normality is violated, and chi-square difference tests should be corrected with this value. For all three of the samples of the current data, the scaling correction factor was not different from 1.00, indicating multivariate normality, and chi-square difference testing could proceed without using the correction factor.

Measurement Models

For each group's measurement model, all latent variables were allowed to covary, and observed parceled indicators were permitted to load on only their respective factors. Per convention, it is required that every latent variable in SEM analyses have a scale and the choice of which indicator loading to fix to 1.0 is typically arbitrary (Kline, 2005). In each of the measurement models, the loading of the first parceled indicator of each factor was fixed to 1.0. For the Asian group, the measurement model fit the data well, χ^2 (101, N = 218) = 117.17, *ns*, χ^2/df = 1.16; CFI = .99; TLI = .99; RMSEA = .027 (90% confidence interval = .000, .046); SRMR = .034. The loadings of the measured variables on the latent constructs also indicated that the variables adequately measured their factors, with all loadings statistically significant ($p < .05$) and ranging from .68 to .93. For the Black group, the measurement model fit the data adequately, χ^2 (101, N = 166) = 156.50, $p <$

.001, χ^2/df = 1.55; CFI = .97; TLI = .95; RMSEA = .058 (90% confidence interval = .039, .075); SRMR = .045. The loadings of the measured variables on the latent constructs also indicated that the variables adequately measured their factors, with all loadings statistically significant ($p < .05$) and ranging from .71 to .92. For the White group, the measurement model fit the data well, χ^2 (101, N = 899) = 194.83, $p < .001$, χ^2/df = 1.93; CFI = .99; TLI = .99; RMSEA = .032 (90% confidence interval = .025, .039); SRMR = .025. The loadings of the measured variables on the latent factors indicated that the variables adequately measured their factors, as all loadings were statistically significant ($p < .05$) and ranged from .75 to .95. Correlations between latent factors for each racial group are presented in Table 6.

Structural Model for Testing Mediated Relations

A competing model strategy was used to test the hypothesized structural model (which had five full mediation hypotheses), against a model which was saturated (meaning that there were direct paths between every variable and therefore had no full mediations, only partial mediations). Please see Table 7 for goodness-of-fit summaries and change in $\chi^2$for each sample. Specifically, compared to the saturated model, the hypothesized structural model tested one additional full mediation hypothesis (social physique anxiety would fully mediate the relation between BMI and fear of negative evaluation) and four exploratory full mediation hypotheses (self-esteem would fully mediate the relations between the two ethnic identity factors and social physique anxiety, as well as fully mediate the relation between the two ethnic identity factors and fear of negative evaluation). For clarity, in the current study these two models will be referred to as the hypothesized structural model and the saturated model. See Figure 7 and Figure 8

for a visual depiction of the hypothesized structural model versus the saturated model, and see Table 7 for fit indices for each racial group.

The hypothesized structural model fit well with each of the three racial groups. However, compared with the fully saturated model, the hypothesized structural model demonstrated a significant decrement in fit for the Asian American and White American groups, but not for the Black American group. Therefore, the hypothesis that the structural model would fit (with its five full mediation hypotheses), was supported within the Black American group. The hypothesized structural model was retained as the final structural model for the Black American students. Specific results about each of the mediation hypotheses for this group are presented in following sections.

Before testing the specific hypotheses of direct and indirect relations in the model for Asian and White groups, modification indices were consulted to determine if there were any alterations which would increase the hypothesized structural model fit to the data for these groups. It is important to note that this strategy was exploratory and data-driven, rather than theory-driven, and may be altering the model to fit spurious findings unique to the current samples but not generalizable to other samples outside the current dataset. For both the Asian American and the White American samples, the modification index with the highest value was associated with adding a direct path from BMI to fear of negative evaluation. After adding this modification, the model was re-run for both groups, yielding satisfactory fit and no significant decrement in fit from the saturated model. Therefore, this modified structural model was kept as the final structural model for both the Asian and White groups. In sum, the hypothesis that the hypothesized structural model would fit the Asian and White American groups was partially supported.

Table 6
Correlations between Latent Factors and Measured Variables for the Measurement Model

Factor / Variable	SE	SPA	FNE	EI Exp	EI Comm	Income	BMI
			Asian American				
1. SE	--						
2. SPA	-.52***	--					
3. FNE	-.45***	.57***	--				
4. EI Exp	.26***	-.06	-.06	--			
5. EI Comm	.25***	.02	-.06	.86***	--		
6. Income	.11	-.08	-.03	.01	-.01	--	
7. BMI	.05	.08	-.17	.01	-.02	.21	--
			Black American				
1. SE	--						
2. SPA	-.58***	--					
3. FNE	-.53***	.61***	--				
4. EI Exp	.31***	-.35***	-.05	--			
5. EI Comm	.34***	-.31**	-.08	.82***	--		
6. Income	-.09	.12	.05	-.05	.08	--	
7. BMI	-.08	.51***	.13	-.23*	-.16	-.04	--

Note. BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.
*$p < .05$; **$p < .01$; *** $p < .001$.

Table 6 (continued)
Correlations between Latent Factors and Measured Variables for the Measurement Model

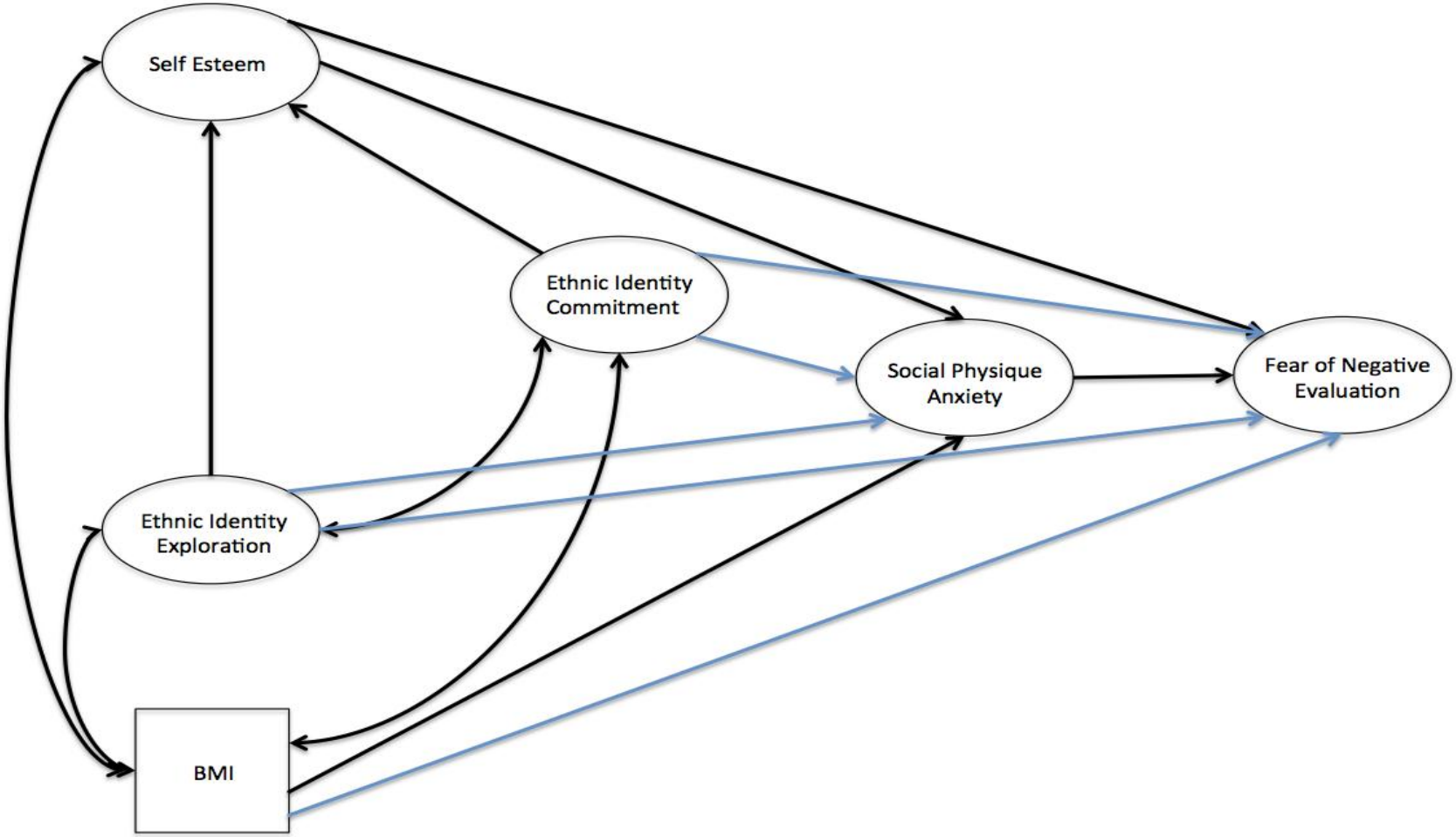
	White American						
1. SE	--						
2. SPA	-.52***	--					
3. FNE	-.57***	.60***	--				
4. EI Exp	.03	-.03	-.01	--			
5. EI Comm	.10*	-.06	-.02	.82***	--		
6. Income	.03	-.01	-.02	.09*	.09*	--	
7. BMI	-.07	.35***	.05	.06	-.01	-.13*	--

Note. BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.
*$p < .05$; **$p < .01$; *** $p < .001$.

This was because social physique only partially mediated the relation between BMI and fear of negative evaluation for these two groups.

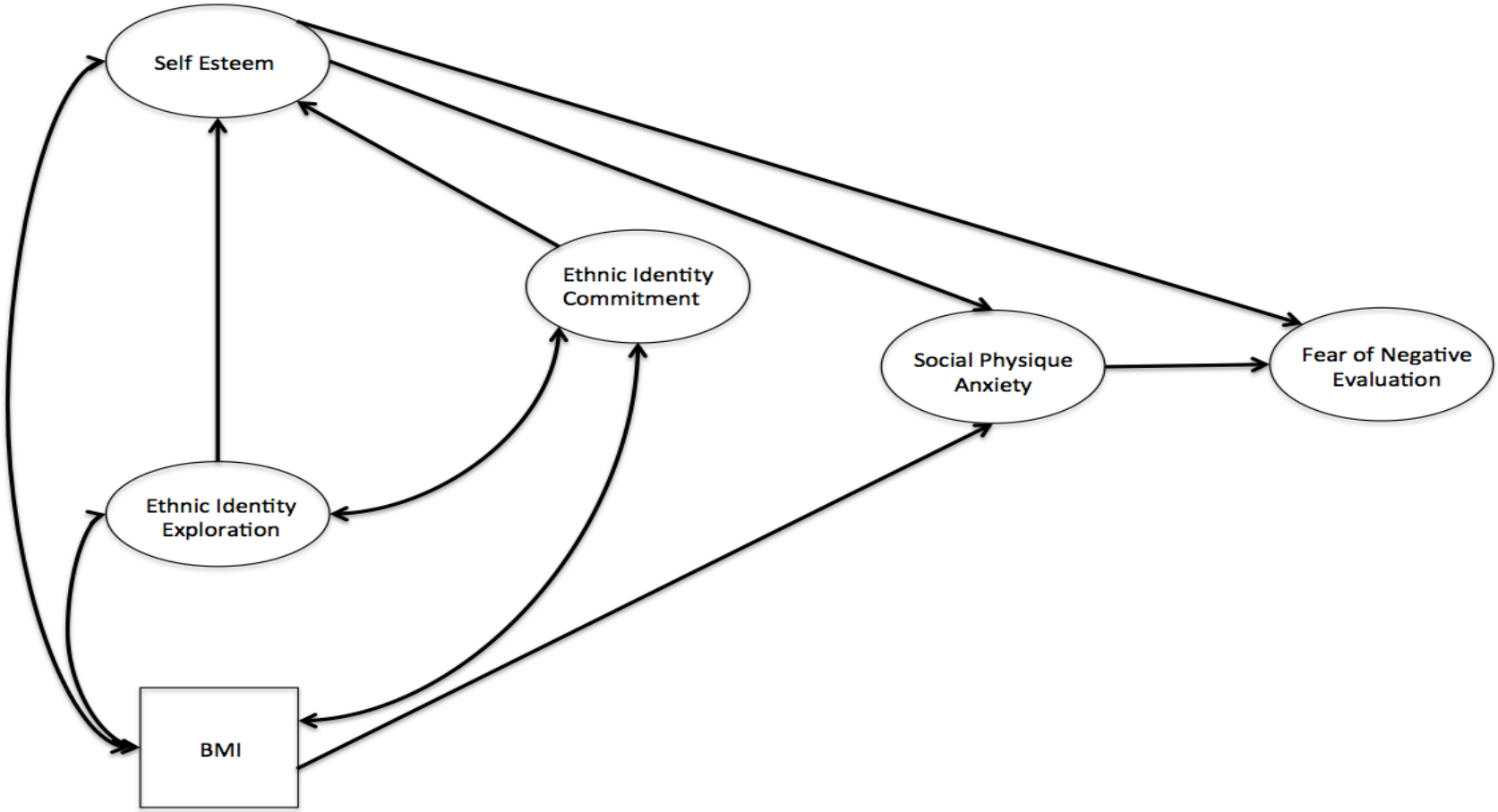
The standardized path coefficients for the mediated model for each of the three groups are presented in Figure 9. The modified structural model for Asian American participants accounted for 8% of the total variance in self-esteem, 31% of the total variance in social physique anxiety, and 40% of the total variance in fear of negative evaluation. The hypothesized structural model for the Black American participants accounted for 13% of the total variance in self-esteem, 56% of the total variance in social physique anxiety, and 41% of the total variance in fear of negative evaluation. The modified structural model

Figure 7. Fully Saturated Model



Note. The fully saturated model has a total of 15 relations (4 double-headed arrows, 11 direct paths).
Although not shown here for clarity of presentation, income was used as a control variable, with paths leading to all variables in the model.

Figure 8. Hypothesized Structural Model



Note. The hypothesized structural model has a total of 10 relations (4 double-headed arrows, 6 direct paths). Although not shown here for clarity of presentation, income was used as a control variable, with paths leading to all variables in the model.

for the White American participants accounted for 1.52% of the total variance in self-esteem, 37% of the total variance in social physique anxiety, and 47% of the total variance in fear of negative evaluation.

Hypothesized Direct and Total Effects: Hypotheses 2a through 2e

For a visual depiction of the direct paths for each group, please refer to Figure 9. Hypothesis 2a predicted that there would be a negative association between self-esteem and social physique anxiety. This was supported for each racial group. Hypothesis 2b predicted a positive association between BMI and social physique anxiety for each racial group. This hypothesis was supported for the Black and White American groups, but not for the Asian American group ($\beta = .15$, $p = .97$). Hypothesis 2c predicted that self-esteem would be negatively related to fear of negative evaluation. This was supported, such that self-esteem was significantly and negatively related to fear of negative evaluation for each of the three racial groups. In other words, the higher one's self-esteem, the lower one's fear of negative evaluation. Hypothesis 2d predicted a positive association between social physique anxiety and fear of negative evaluation, and this was also supported for each racial group. Hypothesis 2e predicted that the sum of all paths between BMI and fear of negative evaluation (the "total effect" between BMI and fear of negative evaluation) would be significant and positive. This was not supported for the Asian American ($\beta = -.13$, $p = .33$, or White American ($\beta = .004$, $p = .94$) groups, but was supported for the Black American group ($\beta = .21$, $p < .001$).

Indirect Effects Analysis for Hypothesized Mediation: Hypotheses 2f through 2g

Hypothesis 2f predicted that the relation between self-esteem and fear of negative evaluation would be partially mediated by social physique anxiety, and hypothesis 2g

predicted that the relation between BMI and fear of negative evaluation would be fully mediated by social physique anxiety. Traditional methods of testing the significance of mediation (e.g., Baron & Kenny, 1986) are not considered optimal by some experts, because the product of path coefficients that comprise the indirect effect is not normally distributed (Mallinckrodt, Abraham, Wei, & Russell, 2006). As recommended by Fritz and MacKinnon (2007) and to correct for possible skew in the population, the bias-corrected bootstrap procedure was used to test for the significance of indirect effects for each of the two hypothesized mediations. This was done in Mplus by creating 1,000 bootstrap samples from the original data and run with the bias-corrected percentile method to create 1,000 estimations of each path coefficient. Additionally, the product of the path between BMI and social physique anxiety and social physique anxiety and fear of negative evaluation (for hypothesis 2f), as well as between self-esteem and social physique anxiety and between social physique and fear of negative evaluation (for hypothesis 2g), and the 95% confidence interval were computed in these bootstrap samples. A confidence interval which does not include zero is statistically significant at an alpha level of .05 (Mallinckrodt, et al., 2006).

Both of the hypothesized indirect effects in the model were significant for the White and Black American groups, but for the Asian American group, the indirect path between BMI and fear of negative evaluation through social physique anxiety was not significant (see Table 8). Thus, this lends support to the hypothesis that the relation between self-esteem and fear of negative evaluation is partially mediated by social physique anxiety among all three racial groups. The hypothesis that social physique

Table 7
Goodness-of-Fit Summaries

Asian American Sample				Fit Indices				
Model	χ^2	*df*	χ^2/df	CFI	TLI	RMSEA [90% CI]	SRMR	$\Delta\chi^2$ (df) from Saturated Model
Saturated	117.12	101	1.16	.99	.99	.027 [.000, .046]	.034	
Hypothesized Structural	137.10*	106	1.29	.99	.98	.037 [.015, .053]	.050	19.98 (5)**
Modified Structural	125.32	105	1.19	.99	.99	.030 [.000, .048]	.045	8.20 (4)
Black American Sample				Fit Indices				
Model	χ^2	*df*	χ^2/df	CFI	TLI	RMSEA [90% CI]	SRMR	$\Delta\chi^2$ (df) from Saturated Model
Saturated	156.50***	101	1.55	.97	.95	.058 [.039, .075]	.045	
Hypothesized Structural	166.35***	106	1.57	.96	.95	.059 [.041, .075]	.061	9.85 (5)

Note. CFI values of .95 or greater indicate adequate fit to the data, TLI values of .95 or greater indicate adequate fit to the data, RMSEA values of .06 or lower indicate adequate fit to the data, SRMR values of .08 or lower indicate adequate fit to the data.
*$p < .05$; **$p < .01$; *** $p < .001$.

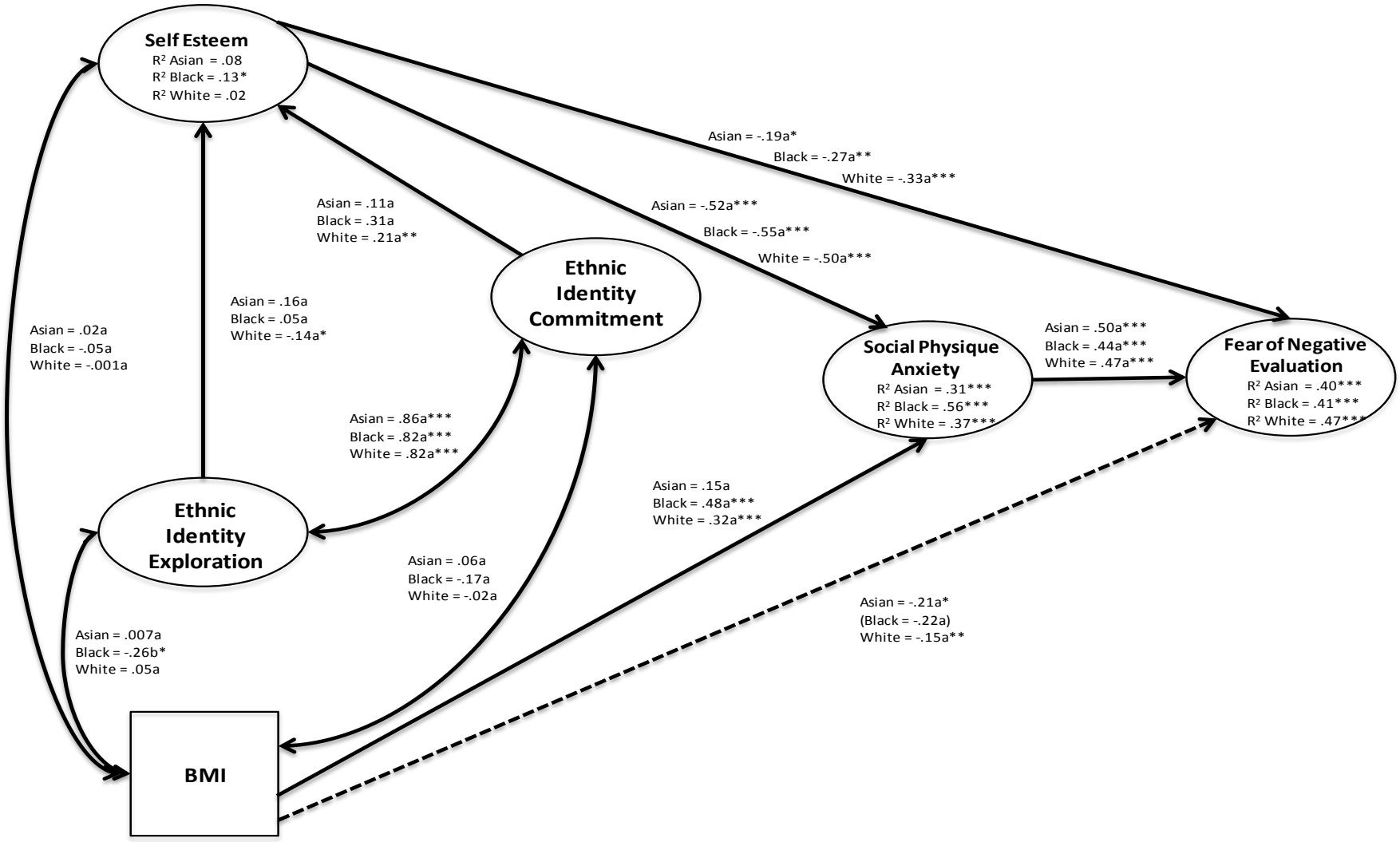
Table 7 (continued)
Goodness-of-Fit Summaries

White American Sample				Fit Indices				
Model	χ^2	*df*	χ^2/df	CFI	TLI	RMSEA [90% CI]	SRMR	$\Delta\chi^2$ (df) from Saturated Model
Saturated	194.83***	101	1.93	.99	.99	.032 [.025, .039]	.025	
Hypothesized Structural	207.51***	106	1.96	.99	.99	.033 [.026, .039]	.029	12.68 (5)*
Modified Structural	198.83***	105	1.89	.99	.99	.032 [.025, .038]	.026	4.00 (4)

Note. CFI values of .95 or greater indicate adequate fit to the data, TLI values of .95 or greater indicate adequate fit to the data, RMSEA values of .06 or lower indicate adequate fit to the data, SRMR values of .08 or lower indicate adequate fit to the data.
*$p < .05$; **$p < .01$; *** $p < .001$.

anxiety would fully mediate the relation between BMI and fear of negative evaluation was supported for the Black American group. For the White American group, this hypothesis was partially supported; there was partial mediation between BMI and fear of negative evaluation because of the presence of the significant direct path added to the hypothesized structural model post-hoc. Results failed to support the hypothesis that social physique anxiety would be a mediator between BMI and fear of negative evaluation for the Asian American group.

Figure 9. Final Structural Model Paths and Standardized Path Values for Asian, Black, and White racial groups



Note. Although not shown here for clarity of presentation purposes, income was used as a control variable, with paths leading to all variables in the model.
Path values of different subscripts indicate significant differences between racial groups. Dotted line indicates the post-hoc exploratory path added for the Asian and White American groups from BMI to Fear of Negative Evaluation. This path was not added for the Black American group because the addition of this path did not increase fit and was not theorized prior to the analysis. However, the path value for the Black group is included in parentheses to illustrate that the path value would not have been significantly different from those of the Asian and White American groups.
*$p < .05$; **$p < .01$; *** $p < .001$.

Purpose 3: Exploratory Direct Effects: Research Question 3a and Hypothesis 3a

An additional purpose of the study was to explore whether there would be a relation between ethnic identity exploration and self-esteem, and between ethnic identity commitment and self-esteem. Research question 3a, whether ethnic identity exploration was associated with self-esteem for each of the three racial groups was partially supported. The relation between ethnic identity exploration and self-esteem was not significant for both the Asian ($\beta = .16$, $p = .31$) and Black American groups ($\beta = .05$, $p = .82$). For the White American group, the relation between ethnic identity exploration was significant and negative ($\beta = -.14$, $p < .05$). Hypothesis 3a predicted that ethnic identity commitment would be positively related to self-esteem for each of the three racial groups. The relation between ethnic identity commitment and self-esteem was not significant for the Asian ($\beta = .11$, $p = .51$) and Black American groups ($\beta = .31$, $p = .12$) but it was significant for the White American group ($\beta = .21$, $p < .05$). It had also been posited that perhaps ethnic identity commitment would relate more strongly to self-esteem than would ethnic identity exploration. This was supported for the White American group, where constraints on the path loadings between each of the ethnic identity

Table 8
Bootstrap Tests of Hypothesized Standardized Indirect Effects for the Final Structural Model for each Racial Group

Independent and mediating variables	Dependent variable	β [a]	*SE* [a]	95% CI [b]
		Asian American		
BMI → SPA	FNE	.08	.09	-.11, .26
SE → SPA	FNE	-.26	.06	-.38, -.14***
		Black American		
BMI → SPA	FNE	.21	.05	.13, .30**
SE → SPA	FNE	-.24	.06	-.34, -.14***
		White American		
BMI → SPA	FNE	.15	.03	.10, .12***
SE → SPA	FNE	-.24	.03	-.28, -.19***

Note. BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation.
[a] These bootstrap estimates were the mean of average indirect effects (β) and average standard errors (*SE*) from the 1,000 bootstrap samples. [b] Bias-corrected 95% confidence intervals that do not include zero indicate a statistically significant indirect effect ($p < .05$).
*$p < .05$; **$p < .01$; *** $p < .001$.

variables and self-esteem yielded a significant decrement in fit compared to the structural model without such constraints ($\Delta \chi^2 = 5.55$, $\Delta df = 1$, $p < .05$). However, this was not the case for the Asian American group ($\Delta \chi^2 = .39$, $\Delta df = 1$, *ns*), or the Black American group ($\Delta \chi^2 = .09$, $\Delta df = 1$, *ns*), indicating that the relation between self-esteem and ethnic identity commitment was no stronger than the relation between self-esteem and ethnic identity exploration for these groups.

Indirect Effects Analysis for Exploratory Mediation: Hypothesis 3b and Research Question 3b

There were several additional exploratory hypotheses and questions regarding indirect effects of the hypothesized structural model tested in the current study. Hypothesis 3b predicted that self-esteem would fully mediate the relation between ethnic identity exploration and social physique anxiety and between ethnic identity commitment and social physique anxiety. Research question 3b asked whether self-esteem would fully or partially mediate the relation between ethnic identity exploration and fear of negative evaluation, and between ethnic identity commitment and fear of negative evaluation. To test the significance of these potential indirect effects, the bootstrapping procedure was used with each of the three racial groups. For the White American group, there were significant indirect effects between ethnic identity exploration and social physique anxiety, ethnic identity exploration and fear of negative evaluation, ethnic identity commitment and social physique anxiety, and ethnic identity commitment and fear of negative evaluation (see Table 9). In other words, for the White American group, self-esteem fully mediated the relations between ethnic identity exploration and social physique anxiety, and between ethnic identity commitment and social physique anxiety. Self-esteem partially mediated the relations between ethnic identity exploration and fear of negative evaluation, and between ethnic identity commitment and fear of negative evaluation. However, for the Asian and Black American groups, there were no significant indirect effects from ethnic identity exploration and commitment to either social physique anxiety or fear of negative evaluation. It should be noted that the indirect effects across

all racial groups are small, and it may be that significant indirect effects were more likely to arise in the White American group because of the larger sample size of that group.

Table 9
Bootstrap Tests of Exploratory Standardized Indirect Effects for the Final Structural Model for each Racial Group

Independent and mediating factor	Dependent factor	β [a]	*SE* [a]	95% CI [b]
		Asian American		
EiExp → SE	SPA	-.08	.11	[-.26, .09]
EiComm → SE	SPA	-.06	.11	[-.23, .12]
EiExp → SE	FNE	-.03	.05	[-.11, .06]
EiExp → SE → SPA	FNE	-.04	.06	[-.13, .05]
EiComm → SE	FNE	-.02	.67	[-.10, .06]
EiComm → SE → SPA	FNE	-.03	.05	[-.12, .06]
		Black American		
EiExp → SE	SPA	-.03	.12	[-.23, .18]
EiComm → SE	SPA	-.17	.13	[-.37, .04]
EiExp → SE	FNE	-.01	.07	[-.12, .10]
EiExp → SE → SPA	FNE	-.01	.06	[-.10, .08]
EiComm → SE	FNE	-.08	.07	[-.20, .03]
EiComm → SE → SPA	FNE	-.07	.06	[-.17, .02]
		White American		
EiExp → SE	SPA	.07	.04	[.01, .13*]
EiComm → SE	SPA	-.10	.04	[-.10, -.04***]
EiExp → SE	FNE	.05	.02	[.01, .08*]
EiExp → SE → SPA	FNE	.03	.02	[.01, .06*]
EiComm → SE	FNE	-.07	.02	[-.11, -.03**]
EiComm → SE → SPA	FNE	-.05	.02	[-.08, -.02**]

Note. BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.
[a] These bootstrap estimates were the mean of average indirect effects (β) and average standard errors (*SE*) from the 1,000 bootstrap samples. [b] Bias-corrected 95% confidence intervals that do not include zero indicate a statistically significant indirect effect ($p < .05$).
*$p < .05$; **$p < .01$; *** $p < .001$.

Purpose 4: Test of Exploratory Research Question 4a: Linearity of Relation between BMI and Social Physique Anxiety

The fourth purpose of the current study pertained to whether BMI would be related to social physique anxiety in a linear or quadratic fashion. This was tested with a hierarchical multiple regression analysis for each group, with scores on BMI entered as a predictor variable and scores on the Social Physique Anxiety Scale as the outcome variable. Also prior to this analysis, to reduce non-essential multicollinearity, BMI was "centered," by subtracting its mean from its corresponding scores for that racial group. The quadratic term was created by squaring these centered BMI values (BMI x BMI). After the centered value of BMI were each entered using a forced entry method, the quadratic term was allowed to enter the equation if it was significant, using the forward method.

For the Asian American group, BMI did not explain a significant proportion of variance in social physique anxiety $R^2 = .03$, $F(1, 59) = 1.59$, $p = .16$. The quadratic term was not significant and did not enter in the next step, $t(58) = .21$, $p = .16$. For the Black American group, BMI explained a significant proportion of variance in social physique anxiety $R^2 = .24$, $F(1, 90)$, $p < .001$. The quadratic term was not significant and did not enter in the next step, $t(89) = -.99$, $p = .32$. For the White American group, BMI explained a significant proportion of variance in social physique anxiety $R^2 = .13$, $F(1, 354)$, $p < .001$. However, the quadratic term was not significant and did not enter in the next step, $t(353) = -1.84$, $p = .07$. Thus, for all three racial groups, results indicated that the relation between BMI and social physique anxiety was not quadratic. For the Black and White American groups, the relation between BMI and social physique anxiety is

better described as linear; for the Asian American group, the relation between BMI and social physique anxiety is not significant.

Further exploration of the relation between BMI and social physique anxiety for the Black and White American groups revealed that the correlation existed among both those who were overweight (R = .28, n = 63, p = .02), and those who were under or normal weight (R = .26, n = 385, p < .001).

Post-hoc Exploratory Analysis 1: Relations between BMI and Fear of Negative Evaluation among Asian American and White American Women

Because the hypothesized structural model demonstrated partial fit for both the White and Asian American groups, with an exploratory path between BMI and fear of negative evaluation that needed to be added to the model of each of these groups, it was important to further investigate the nature of this path for these two groups. For both of the groups, the path was negative, meaning that the higher the value of BMI, the lower one's fear of negative evaluation. Conversely, it had been hypothesized that total effect between BMI and fear of negative evaluation would be positive, such that the higher a woman's BMI, the higher her fear of negative evaluation. Because the linearity of the relation between BMI and social physique anxiety has been questioned in the current study and elsewhere in the literature and because social physique anxiety is also a type of evaluation fear, it was thought that perhaps a curvilinear (e.g., quadratic) relation between these variables could possibly explain this puzzling negative linear relation. Therefore, an exploratory analysis was conducted whereby the quadratic BMI term was entered into the modified structural model for each of the Asian American and White American groups. The path of the quadratic term was not significant for the Asian American (β = .21, p =

.31) or the White American (β = .21, p = .53) participants, failing to support the exploratory hypothesis that a quadratic relation would better explain the association between BMI and fear of negative evaluation.

Negative Bivariate Correlation between BMI and Fear of Negative Evaluation among Asian American Women

A second, but related puzzling finding was that in the bivariate correlations (see Table 3), neither of the two components of BMI (height and weight) were significantly related to fear of negative evaluation for the White and Black American groups, but for the Asian American group, there was a small to medium, negative, and significant relation between weight and fear of negative evaluation. This relation had the opposite sign of what was predicted. Because this relation may be better explained by a curvilinear relation as described above, it was also explored within a hierarchical multiple regression, with weight and its quadratic term as predictors and fear of negative evaluation as the outcome variable. Also prior to this analysis, to reduce non-essential multicollinearity, weight was "centered," by subtracting its mean from its corresponding scores for the Asian American group. The quadratic term was created by squaring these centered weight values (weight x weight). After the centered value of weight was entered using a forced entry method, the quadratic term was allowed to enter the equation if it was significant, using the forward method. Weight explained a significant proportion of variance in fear of negative evaluation for the Asian American group R^2 = .06, $F(1, 65) = 4.39$, $p < .05$. The quadratic term was also significant and entered in the next step, $t(64) = 2.29$, $p < .01$. The quadratic term explained an additional 13% of the variance in fear of negative

evaluation. Visual examination of the scatterplot indicated that at low and high values of BMI, fear of negative evaluation tends to be higher than at the middle values of BMI.

Therefore, an exploratory analysis was conducted whereby the BMI variable was replaced with the weight variable, and the quadratic weight term was additionally entered into the hypothesized structural model for the Asian American group. The path of the quadratic term was significant ($\beta = .22$, $p < .01$). Although this is not directly related to the current study's hypotheses, this result implies that Asian American women with very low and very high weights fear negative evaluation more than those of a typical weight for the Asian American group.

Post-hoc Exploratory Analysis 2: Path Model: Tests of Invariance Across Groups

Several of the paths in the final structural model appear to fit more strongly for some groups than for others, as evidenced by a larger path coefficient. For example, the path between ethnic identity commitment and self-esteem is .31 for Black American participants, and .21 for White American participants; likewise, the path between ethnic identity exploration and self-esteem is .16 for Asian American participants, and -.14 for White American participants. However, the larger path values are not significant, whereas the smaller path values are significant. This may be due to the White sample having a substantially larger *n* than the Asian or Black samples. Additionally, it has been noted that just because one sample may have a significant effect and another sample does not, their path values may not be significantly different from each other (Gelman & Stern, 2006). In order to test the differences between these path coefficients, it was first necessary to establish measurement invariance, to ensure that indicators assessed their factors equally

well in each of the racial groups. Then, comparisons could be made between each of the structural paths of interest.

Testing the Configural Model

The second step involves testing for the same number and pattern of factors and their loadings across each of the groups, as recommended by Muthén and Muthén (2010). First, a model was run with factor loadings, intercepts, and residual variances free across groups. This model fit well, χ^2 (303, N = 1,283) = 468.92, $p < .001$, $\chi^2/df = 1.55$ (CFI = .99; TLI = .98; RMSEA = .036 95%CI .029, .042; SRMR = .030). This configural model thus serves as an adequate baseline for comparison with subsequent models.

Establishing Measurement Invariance: Loading Invariance

The third step involves testing for measurement invariance, where parameters are constrained to be equal across the three groups. In the current field of multi-group modeling, assessment of invariance of error variances-covariances is widely regarded as excessively stringent and overly-restrictive, particularly when the main focus is on equivalence of structural paths (Byrne, 2006), and therefore the primary focus of measurement invariance models is typically restricted to assessment of factor loading invariance (Byrne, 2006; G. Hancock, personal communication, May 3, 2011). Therefore, the model was run with factor loadings constrained to be equal across groups and intercepts and residual variances free (L. K. Muthén, personal communication, May 3, 2011). In multigroup models it is recommended to fix the unstandardized loading of the same indicator on each factor to equal 1.0, and this procedure was followed. This model fit well, χ^2 (323, N = 1,283) = 489.83, $p < .001$, $\chi^2/df = 1.52$ (CFI = .99; TLI = .98; RMSEA = .035, 95%CI .028, .041; SRMR = .035), and did not result in a significant

decrement in fit from the model where no loadings were constrained to be equal ($\Delta \chi^2$ = 20.91, *ns*, ΔCFI = .001).

However, because fixed loadings cannot be tested in measurement invariance, some authors (Kline, 2005) recommend reanalyzing the model after fixing the loadings of other indicators to 1.0 for each of the groups, to test whether these indicators assess the factors equally well in all groups. Therefore, the second indicator of each group was fixed to a loading of 1.0, for both the initial configural model χ^2 (303, *N* = 1,283) = 468.92, *p* < .001, χ^2/df = 1.55 (CFI = .99; TLI = .98; RMSEA = .036, 95%CI .029, .042; SRMR = .030) and the loading invariance model, (323, *N* = 1,283) = 489.83, *p* < .001, χ^2/df = 1.52 (CFI = .99; TLI = .98; RMSEA = .035, 95%CI .028, .041; SRMR = .035), also revealing no significant decrement in fit ($\Delta \chi^2$ = 20.91, *ns*, ΔCFI = .001). Therefore, factor loading invariance was established across the three groups.

Structural Invariance of Paths of Interest

In order to test the structural invariance of the paths between ethnic identity exploration and self-esteem, and ethnic identity commitment and self-esteem, and because measurement invariance had been established, significance tests of the difference between the path coefficients of interest were considered appropriate (Hancock, personal communication, May 15, 2011). Significant path value differences by group are denoted as subscripts in Figure 9. Of note, for the path from ethnic identity commitment to self-esteem, results indicated no significant difference between Black and Asian $t_{(382)}$ = .80, *p* >.05, Black and White $t_{(1,063)}$ = -.38, *p* > .05, or Asian and White $t_{(1,115)}$ = -.63, *p* > .05. For the path from ethnic identity exploration to self-esteem, results also indicated no significant difference between Black and Asian $t_{(382)}$ = .57, *p* > .05, Black and White

$t_{(1,063)} = .40$, $p > .05$, or Asian and White $t_{(1,115)} = 1.60$, $p > .05$. Therefore, none of the groups were statistically significantly different from each other on any of the paths between the ethnic identity factors and self-esteem.

Post-hoc Exploratory Analysis 3: Ethnic Identity as a Single Factor

Because of the strong correlation between ethnic identity exploration and ethnic identity commitment ($r = .82$ for the Black and White groups and $r = .86$ for the Asian group), it was thought that this measure may best be incorporated into the study as a single factor, so as to determine whether self-esteem mediates the relation between overall ethnic identity and social physique anxiety, as well as between overall ethnic identity and fear of negative evaluation. Therefore, the latent variable path analysis was re-run with ethnic identity as a single factor and the three exploration and three commitment items loading onto this single factor.

Measurement Models

For each group's measurement model, all latent variables were allowed to covary, and observed parceled indicators were permitted to load on only their respective factors. In each of the measurement models, the loading of the first parceled indicator of each factor was fixed to 1.0. For the Asian group, the measurement model fit the data well, χ^2 (107, $N = 218$) = 178.50, *ns*, $\chi^2/df = 1.67$; CFI = .97; TLI = .96; RMSEA = .055 (90% confidence interval = .041, .069); SRMR = .039. The loadings of the measured variables on the latent constructs also indicated that the variables adequately measured their factors, with all loadings statistically significant ($p < .05$) and ranging from .63 to .93. For the Black group, the fit statistics indicated that the measurement model did not fit optimally, χ^2 (107, $N = 166$) = 202.05, $p < .001$, $\chi^2/df = 1.89$; CFI = .94; TLI = .92;

RMSEA = .073 (90% confidence interval = .058, .088); SRMR = .049. For the White group, the measurement model did not fit the data well, χ^2 (107, N = 899) = 662.76, p < .001, χ^2 /df = 6.19; CFI = .94; TLI = .92; RMSEA = .076 (90% confidence interval = .071, .082); SRMR = .034. For both the Black and White American groups, the pattern of correlating residual variances suggested by the modification indices indicated that two modifications would need to be made for each group to increase model fit to a reasonable level. The pattern of modifications mirrored the distinction between the exploration and commitment factors, with only commitment items correlating with each other. For this reason, it may be argued that the model modifications were consistent with theory that exploration and commitment are distinct processes.

However, the current study opted to not proceed with testing the model with the single factor of ethnic identity, because empirical analysis of model fitting does not allow researchers to determine which modification indices are based on chance capitalizations, a risky endeavor early in a structural equation path model. Also, measurement model modifications which are post-hoc are rarely generalizable to the population, given that they are often sample specific (Landis, Edwards, & Cortina, 2009). This is particularly relevant in the present study, whereby one group needed no modifications to the ethnic identity aspect of the measurement model, but two groups did require correlated residuals. It was decided that introducing uncertainty into the conceptual meaning of ethnic identity with data-driven modifications of indicator loadings, especially for different groups, would pose more conceptual problems than answer theoretical questions about self-esteem's role in mediating between ethnic identity and the outcome variables.

Summary of Findings from New Bioecological Model

The main goal of the current study was to synthesize the most commonly used models of body image and social anxiety development into a more parsimonious, yet comprehensive model of the development of these outcomes. This new model is based on a bioecological perspective and suggests that, for all racial groups, social physique anxiety mediates the relation between self-esteem and fear of negative evaluation. There are some racial differences in the other relations in the model, for instance, that social physique anxiety mediates the relation between BMI and fear of negative evaluation but only for the Black and White groups. Only for the White group did ethnic identity seem to be related to social physique anxiety and fear of negative evaluation (albeit only in a minor way). Additionally, social physique anxiety appears to relate to physical features other than BMI for Asian American women. Self-esteem appears to not be a significant protective factor in buffering the relation between BMI and social physique anxiety for White and Black American women. In general, results support the utility of a bioecological model in predicting fear of negative evaluation, and this model is generally consistent across the three largest racial-ethnic groups of women in an incoming freshman class.

CHAPTER VI

Discussion

The current study examined several previously untested issues in the study of physical and general evaluation fears among college women. It supports the utility of a bioecological framework (see Figure 2) to conceptualize the multiple systems and contexts relevant to body image and social anxiety development within a population particularly vulnerable to these psychosocial problems. First, the chronosystem focused on temporal factors, such that youth transitioning to college for the first time experience increased social comparison, shifting peer networks, and increased autonomy due to leaving family. This is a developmentally stressful time for these students, as they look to peers for validation and to fulfill needs to belong to social groups. Indeed, up to 33% of college students suffer from clinical or near-clinical levels of social anxiety (Strahan, 2003). Women outnumber men in the diagnosis of social anxiety and are at a special risk for developing social anxiety during the transition to college (Parade, Leerkes, & Blankson, 2010). Second, the macrosystem focused attention to culture and gender norms and oppression, considerations which guided the current study's focus on women. Women are especially likely to engage in the social comparison about body physique, because of sociocultural norms transmitted through the exosystem (e.g., media), and microsystem (e.g., family, peer) elements, about women's ideal body shape, type and weight. These pressures may differ depending on the social group to which women identify, including ethnic group. It is for this reason that ethnic identity was measured in this model, to determine how much women of various racial backgrounds identify with the groups which transmit distinct messages and pressures about the ideal female

physique. According to the bioecological framework, all of the systems previously mentioned impact and interact with biosystem characteristics of precollege women: temperament, personality, and physical features.

Through the measurement and modeling of the relations between these biosystem constructs, it appears that the synthesis and elaboration on three commonly-used bioecological-based models (Dual Pathway, Multidimensional, and Body Objectification) combined into one model conceptualized for this study, accounts for just over half of the variance in social physique anxiety and nearly half of the variance in fear of negative evaluation. This model fits well for each of the racial groups, with only one modification necessary to increase fit to a level comparable to the saturated model for the Asian American and White American women. Therefore, it is possible to use this selection of biosystem variables to predict a substantial proportion of college women's evaluation fears. In sum, the proposed model is unique by incorporating several constructs and variables which have not yet been used in combination to predict body image and social anxiety development. However, it also fits comparably to an alternative model which has direct paths between every variable. The proposed model not only provides strong prediction to the outcomes of interest, it is also more parsimonious.

Following is an interpretation of the results of each hypothesis or research question, the theoretical meaningfulness of each these findings, and some suggestions for future research based on the discoveries made about each hypothesis. In the final section is a discussion of practical implications and future directions based on limitations of the current study.

Moderation Hypothesis 1a: Self-Esteem, BMI, and Social Physique Anxiety

The first purpose of this study was to investigate whether self-esteem would moderate the relation between body mass index (BMI) and social physique anxiety among Asian, Black, and White women just prior to them beginning their first year at a public university. Specifically, it was hypothesized that self-esteem would reduce the positive relation between BMI and social physique anxiety. Of note, among the Asian American women, there was no significant relation between social physique anxiety and BMI. The Black American and White American women each had a positive and medium to strong effect size for the relation between BMI and social physique anxiety *(r* = .48, .32 respectively). For these groups, this indicates support for the prediction that the higher one's BMI, the more one will experience various forms of body image disturbance, such as anxiety about physique in social situations. According to the Dual Pathway Model, it is when women internalize pressures of thinness and realize that they may not match these social standards (e.g., are not "thin enough") that they begin to develop body image difficulties (Stice, 1994). In this study, it was thought that because self-esteem would reduce one's internalization of sociocultural pressures to be thin, higher self-esteem would be associated with a reduced likelihood that those with higher BMIs would have more social physique anxiety than those with lower BMIs.

Although self-esteem was significantly and negatively correlated with social physique anxiety, it was not associated with a reduction in the relation between BMI and social physique anxiety for Asian American, Black American, or White American women. Among Black and White American women, regardless of self-esteem, one experiences higher social physique anxiety with higher BMI scores. It may be that self-esteem is too distal a measure from BMI to moderate its relations with other variables.

Interestingly, in the bivariate correlations, self-esteem is not significantly related to BMI at all, for any of the racial groups. Perhaps it only relates to BMI through its joint association with other intrapsychic variables that are more closely and directly related to self-esteem or body appearance such as sociocultural pressure for thinness (Phan & Tylka, 2006).

Latent Variable Path Analysis

The second purpose of this study was to investigate whether a bioecological perspective could predict body preoccupation and fear of negative evaluation among Asian, Black, and White American women entering their first year of college. First, the proposed measurement model fit well with all three racial groups, indicating that all items loaded onto their respective factors as hypothesized. In general, the hypothesized structural model fit well with all racial groups. However, one statistical modification needed to be made to the model for the Asian and White groups in order to increase model fit relative to the saturated model, that of adding a path from BMI to fear of negative evaluation. After this modification was made, the model fit just as well as the saturated model and was therefore the best-fitting, most parsimonious model for these two groups. This model posited a number of different predictions, and each is addressed below.

Hypothesis 2a: Self-Esteem and Social Physique Anxiety

One hypothesis of the proposed structural model was that self-esteem would be negatively associated with social physique anxiety. This was supported within each racial group. As noted previously, self-esteem was negatively and strongly associated with social physique anxiety across Asian, Black and White women. This is consistent with

both the Body Objectification and Dual Pathway Models, which posit that when young women notice that they do not match an ideal thin body, they may try but fail to meet that standard. As a result, they may experience lowered self-esteem and subsequent anxiety about revealing their physical flaws to others, particularly in social situations. This is also consistent with prior findings that low self-esteem may increase a woman's vulnerability to internalize messages to be thin, regardless of her BMI, and therefore make her more susceptible to body preoccupation (Tylka & Subich, 2004).

Body image concerns are largely affected by macrosystemic sociocultural norms and should be assessed with measures that account for the social nature of body preoccupation. Indeed, the body objectification model (Fredrickson & Roberts, 1997) posits that appearance-related anxiety is one of the most important components of body image concerns. The importance of social physique anxiety was demonstrated in the current study, as it was strongly related to self-esteem in both the bivariate correlations and the latent variable path model.

Hypothesis 2b and Exploratory Hypothesis 4a: BMI and Social Physique Anxiety

Another hypothesis proposed within the latent variable path model, was that BMI would positively relate to social physique anxiety because all women likely internalize pressures for thinness to some degree. As a result, the higher one's BMI, the more unacceptable is one's body to others, and therefore the more body preoccupation one should have. This hypothesis was supported among the Black and White American participants, but not among the Asian American participants. It may be that because Asian American women reported slightly lower BMIs and slightly lower variability in BMIs than the other two groups (see Table 2), there was a floor effect and the relation

between BMI and social physique anxiety would be attenuated for this group. Alternatively, social physique anxiety for Asian American women may be impacted by physical features other than a weight-to-height ratio. In fact, prior research on macrosystemic messages to which Asian American women are exposed via family and peers has implied that these women may feel anxious about their body appearance because of cultural stereotypes and social pressures around other physical features such as length of legs, shape of eyes, nose, and skin color, instead of only body weight and height (Yokoyama, 2007). Other racial minority women also experience social pressures about aspects of their physiques other than BMI (Jefferson & Stake, 2009). In this study, BMI was significantly and positively related to social physique anxiety among Black and White American women, with a medium to strong effect size *(r* = .48, .32, respectively). In other words, among these groups, thinner women experienced less social anxiety about physique appearance than heavier women. The current study breaks new ground by synthesizing findings from research on the Body Objectification Model which states that appearance anxiety is particularly strongly related to physical features (Fredrickson & Roberts, 1997) and with research on the Dual Pathway Model which highlights BMI as one of the most salient and socially-scrutinized physical aspects of young women (Stice, 1994).

A thorough literature review had indicated no previous test of whether BMI would be related to social physique anxiety in a linear fashion, that is, whether social physique anxiety is consistently and positively related to BMI over the whole range of weight groups (e.g., underweight, normal weight, overweight, and obese). This study took a closer look at this relation, in order to determine which BMIs are associated with

the least amount of anxiety, and by extension which are more felt to be in line with social standards. Perhaps there would be no relation between social physique anxiety and BMI for women who are normal or underweight, implying that social pressures for women to be at or below a certain BMI are only felt by those who are overweight. Alternatively, the closer a woman is to a healthy or normal body weight, the less social physique anxiety she may experience, and therefore those with normal BMIs would experience less social physique anxiety than women with under or overweight BMIs.

As investigated under exploratory hypothesis 4a, the relation between BMI and social physique anxiety for Black and White women was linear, positive, and consistent across all BMI groups. Even among the underweight and normal weight Black and White women, the higher the BMI, the more physique-related social anxiety experienced. Most women with overweight and obese BMIs were between "moderately" and "extremely" anxious. However, even among those at or below a healthy weight were between "slightly" and "moderately" anxious.

Given that this positive relation is consistent at every level of BMI and does not attenuate at the normal weight level suggests the pervasiveness of body anxiety among those who are below or even normal in terms of their weight to height ratio. This is consistent with qualitative studies which describe many women as regularly trying but failing to succeed at an untattainable and underweight physique, even if they are physically healthy, and even if they are actually underweight. This also implies social physique anxiety as a potentially dangerous form of fear which may be associated with a pathological process of social impression management extending beyond pressure to simply attain a healthy BMI.

Hypothesis 2c, 2d, and 2f: Self-Esteem, Social Physique Anxiety, and Fear of Negative Evaluation

It was also hypothesized that self-esteem would be negatively related to fear of negative social evaluation. This hypothesis was supported for all three racial groups, such that the higher one's self-esteem, the lower one's fear of negative evaluation. Evidently, self-esteem is associated with fear of negative evaluation directly. This finding is consistent with theories of self-esteem and fear of negative evaluation development, that youths who are between adolescence and young adulthood are extremely aware of the evaluations of others and depend largely on their peers for validation of their self-worth (Leary & Kowalski, 1995). They are particularly likely to become socially anxious if they evaluate themselves negatively, because their low self-evaluations will result in an increased fear that their peers will also notice and judge their flaws in social situations. Although causal relations cannot be posited here, these results are consistent with theory that self-esteem may protect against the development of negative evaluation among women about to enter their first year of a university setting.

Social physique anxiety has been shown to significantly relate to fear of negative evaluation because social physique anxiety is a subtype of evaluation fear that occurs specifically around issues of presenting one's physique to others. This is consistent with findings in the current study, whereby these two variables were positively and strongly related, such that the higher one's social physique anxiety, the higher one's fear of negative evaluation. Moreover, the hypothesized structural model of the current study assesses a previously untested hypothesis. In 1994, Stice posited that poor body image would result in myriad negative psychological and psychosocial consequences, but

unspecific about the types of negative affect which would arise. Therefore, it was posited in the current model that fear of negative evaluation may be one type of negative affect and outcome of not only self-esteem but also social physique anxiety.

More specifically, it was hypothesized that the relation between self-esteem and fear of negative evaluation would be partially mediated by social physique anxiety, after controlling for BMI. This hypothesis was supported for all three groups, as evidenced by the significant negative path coefficient between self-esteem and social physique anxiety. As described earlier, poor self-esteem may make women more vulnerable to developing social physique anxiety, even regardless of their BMIs, because of the pervasiveness of pressures for thinness among women of all weight groups. Additionally, social physique anxiety, significantly, strongly, and directly predicted fear of negative evaluation, with path coefficients ranging between .44 and .50. Again, although temporal data was not collected in the current study, and causal relations cannot be assumed, these patterns are indicative of a possible mechanism by which self-esteem has a significant impact on fear of negative evaluation through reducing social physique anxiety, in addition to a direct effect on reducing fear of negative evaluation. The current study paves the way for future research to verify the temporal nature of these factors.

Hypothesis 2e and 2g: BMI, Social Physique Anxiety, and Fear of Negative Evaluation

Prior research indicated equivocal findings on whether BMI would be related to all forms of negative affect, including fear of negative evaluation, but did not assess whether there may be a mediator which could explain these findings. Results for each racial group are presented below.

Black American group. Among the Black American participants, when the total effect between BMI and fear of negative evaluation was calculated (BMI to fear of negative evaluation through social physique anxiety), BMI was positively related to fear of negative evaluation. Because the only paths leading from BMI to fear of negative evaluation were through social physique anxiety, the indirect relation between BMI and fear of negative evaluation was also significant and positive, indicating that social physique anxiety fully mediated the relation between BMI and fear of negative evaluation, as predicted. This was consistent with the hypothesis that women with higher BMIs would have more anxiety about presenting themselves in social situations, and therefore would have higher fear of negative evaluation than women with lower BMIs. Second, as predicted, social physique anxiety fully mediated this relation, implying that social physique anxiety fully explained how BMI was related to general social evaluation fears for this group.

Asian American and White American groups. However, among the Asian and White American participants, several unexpected findings emerged in the test of the overall relation between BMI and fear of negative evaluation, and in the test of social physique anxiety as a mediator of the relation between BMI and fear of negative evaluation. Unlike the Black American group, the sum of the paths leading from BMI to fear of negative evaluation was not significant for the Asian or White women. This was clarified through a closer look at the specific paths that needed to be added from BMI to fear of negative evaluation in the post-hoc steps.

In the latent variable path model, it had been hypothesized that there would be no direct path between BMI and fear of negative evaluation. However, this path needed to be

added to the model to increase model fit, for both the Asian and White American groups. Therefore, the hypothesis that the relation between BMI and fear of negative evaluation would be fully mediated by social physique anxiety was not supported for either the Asian American group or the White American group. For the Asian American group, BMI was directly related to fear of negative evaluation but not significantly related through its association with social physique anxiety; therefore social physique anxiety did not mediate the relation between BMI and fear of negative evaluation at all. This may be because BMI was not associated significantly with social physique anxiety for the Asian American group, and although it is strongly related to fear of negative evaluation, other physical features may also contribute more to anxiety about physique in social settings for these women. The hypothesis that the relation between BMI and fear of negative evaluation would be fully mediated by social physique anxiety was partially supported for the White American women. Specifically, social physique anxiety partially mediated the relation between BMI and fear of negative evaluation, such that the higher the BMI, the more social physique anxiety and therefore the more fear of negative evaluation a woman experiences.

Another unexpected finding was that the direct path added to the hypothesized structural model in the post-hoc (data-driven) step was actually negative for both Asian and White American groups and is therefore opposite in sign from what was predicted. Specifically, when the variance of social physique anxiety was partialed out of the relation between BMI and fear of negative evaluation, the path between BMI and fear of negative evaluation was negative, such that the higher a woman's BMI, the lower her fear of negative evaluation. On the other hand, the indirect effect from BMI to fear of

negative evaluation through social physique anxiety was positive. It appears as though the positive indirect effect and the negative direct effect cancel each other out, making it appear that there is no relation between BMI and fear of negative evaluation when the overall total effect is assessed. The reason behind this pattern for both the Asian and White groups is unclear, but it may be that because this path was added as a data-driven and exploratory strategy, it is simply a spurious, random relation found within the current dataset. In fact, when this path was added to the model, only a small number of changes were observed in the path values of the model, and they changed by .01 or less. Furthermore, the proportion of variance accounted for in both social physique anxiety and fear of negative evaluation changed modestly when this path was added (for the White American group, a 0% change in social physique anxiety and a 2% change in fear of negative evaluation; for the Asian American group, a 1% change in social physique anxiety and a 4% change in fear of negative evaluation). Such modest changes may simply be an indication that the addition of this path is not meaningful to explaining the variables of interest in the model. Of note, this finding may be characteristic of a suppression effect, particularly for the White American group. In other words, the sign of the path coefficient between BMI and FNE is not only contrary to expectation, but also reversed compared to their zero-order correlation, and therefore should not be interpreted as a meaningful direct effect (Maasen & Bakker, 2001). Future research needs to explore potential suppression effects and this negative relation between BMI and fear of negative evaluation when social physique anxiety or other measures of body preoccupation are partialed out.

Post-hoc exploratory analysis 1: Exploration of the negative relation between BMI and fear of negative evaluation. Because it had been predicted that the relation between BMI and fear of negative evaluation would be positive, it was especially surprising that this relation was negative among the Asian American and White American women, with the more overweight a woman was, the less she had evaluation fears. It was thought that because fear of negative evaluation is a more global measure of evaluation fears than social physique anxiety, and it had been posited that BMI was related to social physique anxiety in a quadratic fashion, perhaps the negative relation between BMI and fear of negative evaluation would be better explained by a quadratic curve. In fact, the negative relation between weight and fear of negative evaluation for Asian American women was better explained by a quadratic curve, such that women who were at the tail ends of the weight distribution (and therefore deviating the most from the typical weight) were more likely to have more fear of negative evaluation than those who were of a normal weight. This is consistent with prior theory and research that if most women internalize sociocultural pressures to be a certain weight, those who deviate from this will experience especially strong fears of being negatively evaluated or judged in social situations. However, it was found in the current study that the discovery of a quadratic nature of the relation between weight and fear of negative evaluation did not carry over to the relation between BMI and fear of negative evaluation for either the Asian or White American groups.

In summary, these complicated findings may explain why prior studies have found equivocal results about whether or not BMI is related to fear of negative evaluation. For the Black and White American groups, social physique anxiety explains

the relation between BMI and fear of negative evaluation, and equivocal findings may have occurred because of failure to assess physique-related evaluation fears. For the White American women, there appears to be two opposite ways by which BMI is related to fear of negative evaluation: the first is that the higher the BMI, the more social physique anxiety, which in turn is associated with more fear of negative evaluation. The second is that higher BMI is actually associated directly with less fear of negative evaluation. Among Asian American women, the relation between BMI and social physique anxiety is weak, but still positive, with less evaluation fears corresponding to higher BMIs. Likewise, although the direct, negative path between BMI and fear of negative evaluation is not significant for Black American women, it is still comparable in size to that of the other two racial groups. What could these patterns mean? It appears that for all of these women, when social physique anxiety is partialed out of the relation between BMI and evaluation fears, that there actually is something about a higher BMI which is associated with lower evaluation fears. Perhaps while late adolescent and young adult women do have anxiety about their bodies, they also simultaneously and separately feel a sense of pride or even a positive attitude about being evaluated on certain aspects of their bodies that are associated with higher BMI. For instance, although such studies are rare, it has been found that higher BMI is associated with higher satisfaction with breast size (Algars, Santtila, Jern, Johansson, Westerlund, & Sandnabba, 2011), and deviation from a curvaceous ideal predicts appearance dissatisfaction (Overstreet, Quinn, & Agocha, 2007). The current study does not incorporate a measure of social physique pride or satisfaction, but these may be unmeasured variables explaining this puzzling finding. Future research could explore social physique pride relevant to women of all

ages, and test whether this is an additional mediator between physique and feelings about being evaluated by others.

Exploratory Hypotheses 3a and 3b and Research Questions 3a and 3b: Ethnic Identity, Self-Esteem, Social Physique Anxiety, and Fear of Negative Evaluation

Several exploratory hypotheses and research questions were posited regarding ethnic identity's relation with social physique anxiety and fear of negative evaluation. Phan and Tylka (2006) found that self-esteem fully mediated the relation between ethnic identity and body preoccupation among Asian American women. The current study sought to test this finding and replicate their results in a cross-racial sample, while adding ethnic identity exploration and commitment to assess their differential relation to self-esteem with the MEIM-R.

In the current study, hypothesis 3a stated that ethnic identity commitment would be positively associated with self-esteem for all three racial groups. As described in the literature review, some researchers had argued that the definition of ethnic identity commitment is traditionally confounded with a sense of pride and affirmation in one's ethnic group, therefore making it such that ethnic identity is consistently but inappropriately associated with measures of self-esteem (Umaña-Taylor, et al., 2004). Few studies thus far have used the new Multigroup Ethnic Identity Measure-Revised (MEIM-R; Phinney & Ong, 2007) to determine whether ethnic identity as measured without the positively-valenced item would still reveal a relation with measures of self-esteem. In support of this hypothesis, the current study used this measure and found that ethnic identity was slightly to moderately and positively related to self-esteem across the three racial groups, and although it was only significant for the White American group,

there were no significant differences in the degree to which it was related to self-esteem across groups. It is possible that there was a significant relation found for the White American group but not the other groups because of the difference in sample sizes, particularly because the Black American group had a higher path coefficient. Additionally, multicollinearity may play a role in the accurate interpretation of the relations between the ethnic identity constructs and self-esteem, because they are correlated highly at .82 to .86. In an analysis of multicollinearity, tolerance values for the simultaneous regression of ethnic identity exploration and commitment on self-esteem were adequate at values greater than .40 (Pedhazur, 1997). However, the high correlation between ethnic identity exploration and commitment calls into question whether it is less likely one would find significance of the path values from the ethnic identity constructs to self-esteem because these factors overlap substantially with each other. Investigation of model fit if ethnic identity were a single factor was attempted and is presented in a subsequent section.

Nevertheless, by testing the relation between separate elements of ethnic identity in this study, it was found that ethnic identity commitment does have a slight to moderate effect size relation to self-esteem (r = .11 for Asian, r = .31 for Black, and r = .21 for White), even when using the revised version of the MEIM without the items assessing pride and affirmation in one's group. It was speculated in the current study that White American women may have a less robust association between ethnic identity commitment and self-esteem, because for this group, ethnic identity has been shown to be less central to the self-concepts of White American individuals. In the analysis of variance table of differences between responses on measures (table 2), White American

participants were significantly lower than Asian or Black American participants on ethnic identity commitment, supporting prior research that White American youth are less likely to engage in the process of forming a strong ethnic identity commitment. However, the relation between ethnic identity commitment and self-esteem was not significantly different between any of the three groups, suggesting support for prior theory that ethnic identity commitment's association with a sense of identification with a larger group, sense of belonging, and stable basis of self-knowledge may give rise to self-esteem among all racial groups (Phinney & Ong, 2007). This is an important contribution to the literature, because it lends preliminary support to this relation even when there are no items assessing affirmation or pride in one's group in the measure of ethnic identity commitment.

Research question 3a asked whether there would be a significant relation between ethnic identity exploration and self-esteem, because prior research had demonstrated an equivocal relation between these variables. Although sample size and statistical power may be an issue in detecting significance in the Asian American or Black American group paths, there was no significant difference between any of the three groups in this relation. The direct relation between these two variables was significant and negative only for the White American group. It may be that among White American young adult women, exploration of ethnic identity is negatively related to self-esteem because an increased exploration of one's racial heritage involves increased awareness and resulting guilt and discomfort after learning about racial privilege and systems of oppression (Morrison, Plaut, & Ybarra, 2010). Additionally, White American women prior to entry into college may have a beginning awareness of their racial identities. In fact, it was only

for the White American group that model fit decreased substantially when the paths between ethnic identity commitment and self-esteem and ethnic identity exploration and self-esteem were constrained to be equal, meaning that exploration and commitment were related differently to self-esteem. For the White group, results parallel past findings that it is the commitment to a group that ultimately provides the basis for the stable sense of self necessary for developing healthy self-esteem. Again, because multicollinearity may be an issue in the appropriate interpretation of the relations between self-esteem and ethnic identity commitment versus exploration, these interpretations are tentative and open to further investigation. Of note, the combined proportion of variance explained in self-esteem by the ethnic identity constructs was just 2% for the White American group. This may be because members of the racial majority are not confronted with the personal and social meaning of their membership in their racial group on a regular basis and is less central to their self-concepts.

Hypothesis 3b stated that self-esteem would fully mediate the relation between ethnic identity exploration and social physique anxiety and between ethnic identity commitment and social physique anxiety, and research question 3b examined whether self-esteem would mediate the relation between ethnic identity exploration and fear of negative evaluation and between ethnic identity commitment and fear of negative evaluation. For the Asian and Black American participants, self-esteem did not serve as a mediator between ethnic identity exploration and social physique anxiety, between ethnic identity commitment and social physique anxiety, between ethnic identity exploration and fear of negative evaluation, or between ethnic identity commitment and fear of negative evaluation. However, for the White American participants, self-esteem did

mediate between both of the ethnic identity variables and social physique anxiety and between each of the ethnic identity variables and fear of negative evaluation. Importantly, the effect sizes for the White American group were small (ranging from r = .03 to r = -10). There are several possible reasons for the lack of substantial mediation of self-esteem between the ethnic identity variables and the outcome variables. As noted above, the relation between each of the ethnic identity variables was strong (between .82 and .86), and any multicollinearity may have inflated standard errors of the paths and reduced the likelihood that path coefficients from the ethnic identity variables through self-esteem and to the outcomes would be statistically significant (Pedhazur, 1997). The measurement of ethnic identity is a challenging task, and it is possible that ethnic identity takes on different meanings within and between individuals in various racial groups that were simply not captured in the current study. Additionally, it may be that the ethnic identity factors simply are not related strongly enough to self-esteem to extend any effects on either social physique anxiety or fear of negative evaluation and therefore they did not show up in this cross-sectional design.

Of note, it was not necessary to add any paths between either of the ethnic identity factors and social physique anxiety or fear of negative evaluation to increase model fit. This supports past tests of the Multidimensional Model (Phan & Tylka, 2006), which found that the direct relation between ethnic identity and body preoccupation was negligible, and that the indirect path through self-esteem was also small. In spite of the medium sized bivariate correlations between the ethnic identity constructs and social physique anxiety for the Black American sample, when self-esteem was partialed out of their relation, there was no significant relation between either of the ethnic identity

factors and social physique anxiety. It appears that ethnic identity as measured in this study does not play a large role in the development of women's evaluation fears, whether global or more specifically about one's body, apart from a modest impact on self-esteem for White American women. The current study extended these findings to three of the largest racial groups on college campuses. It was thought that macrosystem influences of sociocultural pressure for thinness on these young women would depend on a) the extent to which they identify with their group and b) the degree to which the sociocultural or ethnic group to which they identify endorses these values. Unfortunately, in the current study, it was not possible to measure the actual values and pressures for thinness endorsed by these groups. This may also explain why there was only a weak relation between ethnic identity and the outcome variables for all of the groups. Follow-up studies should investigate the sociocultural pressures endorsed by different ethnic and racial groups and then study whether these values mediate the relation between ethnic identity and body preoccupation to more closely evaluate this theory.

Post-hoc Exploratory Analysis 2: Invariance Across Groups

It was hypothesized that the structural model would fit well across all three racial groups, and this hypothesis was supported. Although the primary purpose of the current study was not to test the model for structural invariance across groups, there were a few differences in the structure of the model by each racial group, after modifications were made, indicating that a test of structural invariance may help distinguish whether some paths were stronger for some groups than for others. Tests of individual paths for structural invariance revealed that although the Asian and White American groups had significant paths between BMI and fear of negative evaluation and the Black American

group did not, none of the groups were significantly different from each other in the strength of this path. Similarly, while the Asian American group did not have a significant path from BMI to social physique anxiety, their path value was not statistically significantly different from that of the Black and White American groups. Therefore, while there appear to be slight differences in the modifications needed to more precisely increase model fit for each group, the bigger picture suggests that the hypothesized structure is generally invariant, with no significant differences on the paths of greatest interest. One area of the model where most differences appeared in the magnitude of path values was in the relations between the ethnic identity factors and self-esteem, but it was hard to determine whether multicollinearity may have played a role in the attenuation of the relations between these factors and self-esteem.

Post-hoc Exploratory Analysis 3: Ethnic Identity as a Single Factor

For this reason, a final exploratory analysis was pursued to determine whether a single ethnic identity factor would explain the six ethnic identity items, and, if so, whether this single ethnic identity factor would allow for a better estimation of the contribution of ethnic identity to the development of other variables in the model. Results of this analysis indicated that the single factor did not yield as good a fit as the two-factor solution, therefore, findings from the two-factor solution were retained. Future research should continue assessing the complex relations between the co-development of these two highly correlated sub-factors.

Limitations and Additional Research Directions

It was noted in the introduction that this is a developmental model because the variables theoretically influence each other across childhood, adolescence, and early

adulthood to explain a woman's level of social physique anxiety and fear of negative evaluation once she is at the precipice of entry into college. However, causal explanations cannot be made through cross-sectional research, and even though there may be strong paths between two variables and significant meditational paths, this does not mean that there is a causal relation. Although the hypothesized structural model does fit well, many other plausible models of the exact same constructs may have fit just as well, if not better. Nevertheless, this model did demonstrate comparable fit with an alternative model with direct paths between all constructs. One plausible alternative is that fear of negative evaluation may stem from a temperamental tendency toward anxiety. This may involve an anxious approach to the world and make it more likely that one would be anxious about the appearance of one's physique. Anxiety about body appearance may then lead to more global anxiety, thus creating a reciprocal relation. The order by which the variables influence each other and the directions of the paths in the hypothesized structural model can only be further supported through a design which accounts for temporality. Cross-sectional research such as this study is valuable to the extent that it can support that variables are related at one point in time, and it provides impetus for subsequent longitudinal verification for how these variables may actually predict each other through time.

Despite the large size that was representative of the racial composition of the campus, participant response rate and social desirability are also potentially problematic to the accurate interpretation of these results. While the university census response rate overall is comparable to survey data published in clinical and counseling psychology journals (Van Horn, Green, & Martinussen, 2009), just over half of students did not

respond, thus possibly resulting in a sampling bias. Some students may not have responded to the census at all due to reluctance to trust psychological research or to a fear that their responses would be evaluated by the university – this may have been especially true among the Black American women, who had a significantly lower response rate than the White and Asian American women. If mistrust or fear that responses would be evaluated kept some students from answering the census, it may be that the current study has a selection of students with lower fear of negative evaluation than students in the general population, both attenuating the estimation of the true relations between fear of negative evaluation and other variables in the dataset and reducing the ability to generalize to the entire population of women entering the summer before their entry into college. While this return rate in these groups may have produced both biased measures of central tendency and variability, it does appear that there is not a restricted range on any of the variables measured in each of the three groups. Because there is no data on population level measures of central tendency and variability in any of these groups, it is difficult to ascertain whether these are accurately represented in this sample. Future research must explore new ways of recruiting students from marginalized racial groups to participate in university-wide surveys, as well as continued assessment of the characteristics of survey non-responders in order to inform more accurate generalizations.

Another important factor is that weight and height are sensitive topics to young adult women and they may have skipped these items because of their social physique anxiety. While scores on weight and height are generally reliable with slight racial group differences in estimation of weight and height, women who do not report their weight on questionnaires are likely to be engaging in motivated non-responding, and are more likely

to suffer a negative body image than those who do respond (Tiggemann, 2006). Therefore, there may be an additional sampling bias for the BMI question in the current study, by which women who were higher on social physique anxiety may not have reported their BMIs, therefore attenuating the relation between BMI and social physique anxiety and making the results less generalizable to those with high physique evaluation fears. Another related limitation is that it is impossible to determine the cause of any missing data on a particular measure in this study. Some missing data may be due to fatigue, in which case the results may be more generalizable to women who are more conscientious or patient. However, some missing data may be due to random skipping of questions. Importantly, one of the benefits of using full-information maximum likelihood in the current study was that it does not carry as stringent assumptions about the cause of missing data as do other commonly-used statistical approaches (listwise deletion, pairwise deletion, mean substitution, regression imputation) and has more fit indices and less sample size restrictions than other methods for handling missing data (Greg Hancock, personal communication, March 30, 2011). Although this is a gold-standard approach to missing data handling, it could have been improved upon by the inclusion of auxiliary variables. These variables would account for potential causes or correlates of missingness in the current study design. The use of these variables (e.g., a measure of embarrassment about one's body size) in future studies would help produce even less biased estimates when data were not missing at random.

Also, as noted earlier, one of the goals of the current study was to address whether ethnic identity related directly to social physique anxiety and fear of negative evaluation, because ethnocultural values which are passed down through systemic level influences

are more likely to affect women who identify with their ethnic groups than those who do not. Unfortunately, these actual appearance values and ideals were not assessed in this project due to a lack of valid measures of these constructs among women of different races. This may be why adding a path from ethnic identity exploration or commitment to social physique anxiety or fear of negative evaluation would not have improved model fit or the prediction of either of these outcomes.

As described in the variable review section, ethnicity, race, culture, ethnic identity, and racial identity are terms used to describe constructs that are yet not well understood in the social sciences. As noted earlier, one's ethnic identity status is subject to continuous and dynamic change and the identities of college freshmen develop and shift with changes in their ethnic identity statuses throughout the course of their first year (Syed, Azmitia, & Phinney, 2007). Yet, the current study did not account for the degree to which students' levels of ethnic identity exploration and commitment may have been in flux at the time of the study. Qualitative projects on the subjective and changing nature of ethnic identity, as well as its personal meaning for these students, would shed further light on this additional dimension of ethnic identity. By not assessing the multiple cultural groups to which the students identified, the current project was unable to unravel how evaluation fears relate to the cultural complexities both across and within cultural groups and subgroups. As noted earlier, the three racial groups were separated in analyses, because their different average levels on the variables of interest may have obscured true relations in the study. However, future studies could run the models within separate groups, based on the messages each group commonly receives about acceptable body type, where these messages come from, how they are conveyed, the relative weight

of these messages in light of other social expectations, and how these messages shift in focus over one's lifespan.

Additionally, this study investigated the fear of negative evaluation and social physique anxiety of a racially diverse group of college women without asking them to specify the social circles they were imagining when giving responses. These women may have answered the B-FNE-S and SPAS questions differently if imagining themselves in front of college women, men, their families, new roommates, or among those of races or cultures other than their own. For future studies, knowing who these students were envisioning when answering questions about social contact may be vital in specifying when and in what particular circumstances these results are best applied. The current study did not utilize a measure of sociocultural pressure for thinness because existing measures have significant validity problems for individuals of diverse racial and ethnic groups (Cashel, Cunningham, Landeros, Cokley, & Muhammad, 2003). Measures of sociocultural pressures and their internalization should be created for the myriad social messages women of diverse racial groups receive about appearance, not just thinness.

Finally, the fact that the two factor structure of the MEIM fit better than the single factor structure, but that the factors are so strongly correlated indicates that more work may need to be done on confirmatory factor analyses of the items of the ethnic identity scale, or that researchers need to be aware a priori of which of the ethnic identity factors they most want to use and are more directly applicable to their research questions. For instance, results from the current study reveal the difficulties inherent in simultaneously partialing both ethnic identity factors out of self-esteem, and then attempting to assess whether self-esteem also acted as a mediator between each of these ethnic identity

constructs and evaluation fears. The degree of overlap between the two factors was so high that it was difficult to interpret what about each of the ethnic identity factors might relate to self-esteem after controlling for the other ethnic identity factor. An interesting follow-up study would be to run separate models for ethnic identity exploration and commitment and to see which of these two factors predicts more variance in the outcome variables of the current study or differentially predicts self-esteem. This could be done for each of the three racial groups. Alternatively, it is possible to use the MEIM-R to group participants into high exploration low commitment, high exploration and commitment, low exploration and commitment, or low exploration and high commitment, and then compare the relative fit and associated path values of models of the relations between self-esteem, body preoccupation and negative affect for each of these three groups.

Research extensions of the current study can be conducted to determine the trajectory of the interrelations between these variables throughout the college careers of these women. For instance, is self-esteem still as strongly related to evaluation fears at the end of college? When in a woman's development might this relation be strongest or weakest? Additional work on this topic while using multiple measures of each construct and even multiple methods of measuring each construct would add greater validity to the developmental implications of this model. It will also be important to extend this work into a focus on other pertinent developmental issues experienced by women and related to these outcomes, from the perspectives of a Body and Sexual Objectification framework. For instance, how do breakups with partners, sexual satisfaction, and sexual identity relate to self-esteem and physique evaluation fears of women who are beginning the transition to a more independent lifestyle at ages 17 through 19?

Implications for Practice

The current study utilized a bioecological framework and a synthesis of elements of three bioecological models to provide a parsimonious model of social physique anxiety and fear of negative evaluation development, with particular attention to variables relevant to women who are upon the precipice of entry to college. These results indicate that women who are starting college already have slight to moderate fears of being evaluated, both generally and physically, and these fears are associated with various other intrapsychic elements, such as self-esteem and identity. These evaluation fears are important because they are associated with myriad negative psychosocial outcomes, including depression, suicide, dropping out of college prematurely, social isolation, eating pathology, and unhealthy habits, such as reluctance to engage in exercise. Therefore, the better we can predict these variables, the more likely we are as counselors and student affairs professionals, to intervene before these evaluation fears are excessively problematic for students' psychosocial and professional development. Importantly, social anxiety disorders are especially insidious, prevalent among college students, and unlikely to completely remit on their own or with psychotherapy and medications (Blanco, Garcia, & Liebowitz, 2004).

On the other hand, it is imperative for researchers, and mental health professionals alike to obtain clarity on whether some, if any, social physique anxiety is actually optimal for increasing the likelihood that these women engage in healthy lifestyle habits. While this is open to further empirical investigation, in the current study it appears as though social physique anxiety is positively related to one's body mass index at all levels of BMI for each of the racial groups, meaning that women of all levels of BMI are likely to have

at least some social physique anxiety, even those who are normal or underweight. The current study supports the hypothesis that social physique anxiety is associated with broader evaluation fears, and social anxiety and evaluation fears have been shown to lead to eating disorders, alcohol use and abuse (Neighbors et al., 2007), loneliness (Bruch, Kaflowitz, & Pearl, 1988), increased suicidal ideation and attempts (Cougle, Keough, Riccardi, & Sachs-Ericsson, 2009), other mood disorders (Blanco, et al., 2004), academic difficulties among minority students (Parade, Leerkes, & Blankson, 2010), as well as reluctance to engage in healthy exercise (Brunet & Sabiston, 2009). Additionally, it is evident that young women have fears of the social implications of gaining weight, which may be further exacerbated and made salient on a daily basis by terms such as the "freshman fifteen."

Therefore, although social physique anxiety may indicate dissatisfaction with one's weight or body fat and this dissatisfaction may be an incentive to exercise, the anxiety associated with this dissatisfaction may be wholly detrimental. In other words, it may make women so self-conscious and with other anxiety fears, that they become hopeless about engaging in a regular exercise program or turn to yo-yo dieting. If they do engage in exercise, they would not use it as a primary means to engage in a healthy lifestyle, but rather as a means to change their bodies to please others. The current obesity epidemic is a very serious concern in this country and body image research and practice should investigate the obstacles that need to be lifted for young people to engage in exercise and healthy eating for the purpose of staying fit. A difficult but perhaps necessary challenge for health professionals would be to reduce women's social physique anxiety while replacing it with a less pathological dissatisfaction with unhealthy BMIs.

This could be an especially daunting task, as it has been shown that the more exposure a woman has to microsystem (and by extension exosystem and macrosystem-level) messages about ideal physique, the more anxiety she will experience about her body. These messages are inevitable and aside from national campaigns (e.g., the Dove Campaign For Real Beauty), which aim to increase women's body images but do not necessarily popularize physical health, there may be few opportunities to change sociocultural messages on a macrosystem level. For this reason it is particularly useful to attend to personal strengths that women bring with them to the first year of college to decrease their vulnerability to social pressures and subsequent development of these negative outcomes. In the current study it is notable that social physique anxiety was found to mediate the relation between self-esteem and fear of negative evaluation. While self-esteem may not directly buffer the positive relation between BMI and social physique anxiety, it does appear to contribute substantially to a woman's *lack* of social physique anxiety. If social physique anxiety is indeed a negative influence on the mental and physical health of young women, then a new direction for student affairs and mental health professionals would be to incorporate a section on social physique anxiety or body image anxiety into programs, workshops, and group therapy. These would be designed to bolster students' self-esteem, while simultaneously bolstering their self-efficacy to gain a personal agency and responsibility over the management of their physical health. Attention should be paid to whether such workshop groups are tailored to women or men or are mixed between women and men, given that some, but not all women may tend to feel more social physique anxious around male students.

While the negative path between BMI and fear of negative evaluation in the model was unexpected and needs to be further studied, it suggests that social physique anxiety may suppress a relation whereby women with higher BMIs have lower fear of negative evaluation. The implications here are that social physique anxiety is perhaps not the only means by which weight-to-height-ratios are relevant to the global evaluation fears of women. Some women have physical features which may bolster their willingness to be evaluated by others, and these features may be those which are associated with higher BMIs (Algars, 2011; Overstreet, Quinn, & Agocha, 2007). Mental health professionals need to be prepared to acknowledge this complexity when working with women in therapeutic settings, that they may experience conflicting feelings about their bodies, such as simultaneous pride and shame in physical features. This may be confusing to young women and it may be useful to frame with them their reactions and experiences in light of how their self-esteem (or lack thereof) also contributes to their vulnerability to evaluation fears. It may be easier for young women to explore the influence that social messages have had on their physique anxiety by first exploring how their positive feelings about certain physical features can become a central component of their self-concepts, then reaffirming the role their self-esteem has as motivation for fitness and healthy self-care.

It appears in the current study that there are few cross-group differences in the relations between these variables, and that ethnic identity only very modestly relates to self-esteem for the White American group but not for the other two groups. These weak relations replicate previous studies, therefore lending support to the fact that students' identification with their racial or ethnic group is simply not a salient factor in their

evaluation fears. However, this does not rule out the possibility that thinness messages do vary by race, and that cultural identity is still a process by which these cultural messages are transmitted. Students of various racial groups may receive different messages about the appropriate physical features they should have and what features they need to avoid having or hide in order to not offend others. Prior research has noted that women of minority racial groups receive diverse messages about appropriate physical features (Yokoyama, 2007) and these should be discussed explicitly in programs and workshops on body image and self-esteem, rather than assuming that just weight and height are salient aspects of physical self-consciousness across all groups. The unique meaning of one's cultural or ethnic group membership likely interrelates in complicated ways to women's social physique anxiety and fear of negative evaluation, through the actual sociocultural messages they experience.

Because results generally support the theory that the process of forming an ethnic identity commitment also involves experience and exploration and provides a basis of self-knowledge and self-esteem, for all racial groups including White American women (Smith & Silva, 2011), it is important to explore with students the unique ways in which their commitment to identifying with certain ethnic or racial groups may impact their self-esteem. For all of the women in the current study, the process of developing a commitment to one's ethnic identity may provide a sense of identification with a larger social group, a sense of belonging and social support upon the transition to college, and for racial minority students, a rejection of the negative stereotypical views of their group (Smith & Silva, 2011). Finally, according to Social Identity Theory (Tajfel & Turner, 1986), it may be that individuals who are committed group members give more favorable

evaluations to their group as compared to other groups, in order to enhance their self-esteem. The relation between ethnic identity commitment and self-esteem may be explained by any number of reasons that were not examined in the current study, but the central role that ethnic identity plays in the adjustment of students to the first year of school is significant, particularly among racial minority students (Ong, Phinney, & Dennis 2006). Efforts to aid students in the adjustment to the first year of college life may tailor pre-college workshops and orientation sessions, intergroup dialogues, and dorm-wide group meetings to activities which help students gain greater understanding of their identities within multicultural campuses.

In conclusion, the current study extends prior work by synthesizing biological, psychological, and sociocultural correlates and consequences of body image within one framework relevant to the experiences of a cross-racial sample. Prior research and theoretical work have existed in isolation from each other, which has impeded progress in the field of body image (Fisher, 1990; Pruzinsky & Cash, 2002). This study heeds the recommendations of early specialists in the field to address the cultural components of body image development (Schilder, 1935), while also positing original hypothesizes about the relation between body image and outcomes other than eating pathology, such as fear of negative evaluation (Stice, 1994). Results of this study and a discussion of its findings provide a number of future directions for researchers and practitioners, to acknowledge both the cultural complexity involved in body image and social anxiety development, as well as the potential similarities involved in the process of body image and social anxiety development across a racially diverse sample of young adult women.

APPENDIX A: EMAIL REMINDER TO COMPLETE SURVEY

Subject line: Reminder to complete new student census

Dear Maryland Student,

We look forward to your starting classes this Fall! If you have not yet had a chance to take the University's New Student Census, please do so as soon as possible. The census is a web survey that you can access from home or a library. It can be found athttp://www.studentaffairs.umd.edu/census/.

The census allows us to collect information about the incoming class, to help us understand the college student experience and how students can best succeed.

If you have any questions about the survey,

please email newstudentcensus@umd.edu or call 301-314-7692.

Thank you so much, and we look forward to hearing from you!

Margaretha S. Lucas

Assistant Director, University Counseling Center, and

Associate Professor, Department of Counseling and Personnel Services

APPENDIX B: FINAL REMINDER TO COMPLETE NEW STUDENT SURVEY

Subject line: Final reminder to complete new student census

Dear Maryland Student,

This is your last chance to take the University New Student Census. The Census is an online survey that you can access from home or a library; please take a few minutes and fill it out. It can be found at http://www.studentaffairs.umd.edu/census/. The Census allows us to collect information about the incoming class, to help us understand the college student experience and allows us to better help our new students succeed. We will close the Census on Sunday night, August 29th, 2010. If you have any questions about the survey, please email newstudentcensus@umd.edu or call 301-314-7692.

Thank you!

Margaretha S. Lucas

Assistant Director, University Counseling Center, and

Associate Professor, Department of Counseling and Personnel Services

APPENDIX C: INFORMED CONSENT FORMS SUMMER 2008 AND 2009

UNIVERSITY STUDENT CENSUS AND DIVERSITY ASSESSMENT PROJECT

SURVEY INFORMED CONSENT FORM
Summer 2008

Statement of Age: I state that I am at least 17 years of age, and wish to participate in a multi-year project being conducted on behalf of the University Counseling Center and the Office of the Senior Vice President for Academic Affairs and Provost by Margaretha S. Lucas (in her capacity as Associate Professor of the Department of Counseling and Personnel Services and Interim Assistant Director in the University Counseling Center) and Sharon A. La Voy (in her capacity as Director of Assessment of the Office of Institutional Research, Planning & Assessment) and at the University of Maryland, College Park, Maryland 20742.

Purpose: This project will provide data for a variety of research and institutional purposes. For example, data from the project will help the University to learn about the college experiences, opinions and progress of students, and the effects of diversity. Data may also be used by different departments within the University for a variety of research and institutional purposes, such as enhancing our understanding of college students and what helps them succeed in school and what might cause difficulties, internal and external reporting, and improving the quality of the education, programs and services offered by the University.

Procedures: The procedures for this project involve completing one electronic survey. It is completed after New Student Orientation. It should take approximately 30 minutes to complete this survey.

Your directory and student ID will be used to link responses from each survey you complete to your other survey responses and to academic, financial and other information maintained by the University about you. This might include but not be limited to high school, race/citizenship, gender, date of birth, state of residence, major, SAT/ACT scores, high school GPA, financial aid awards, resident hall assignment.

Confidentiality: Information gathered for this project is confidential but not anonymous. Your name will not be collected or used, but your directory and student ID's will be used to merge your responses to the surveys and with other institutional data about you. Your information will be grouped with data provided by other students in the project for any published reports, presentations and/or publications, and no individual identities or individual responses will be included.

Risks: There are no known risks to individuals who complete the survey.

Benefits: There are no direct benefits to you as a participant in this project. This project is not designed to help you personally, but it may make a valuable contribution to the University's efforts to understand college students and their experiences; assess the impacts of diversity on educational experiences and outcomes; and may improve the quality of the education, programs and services that the University provides to its students.

Freedom to Withdraw And Ask Questions: Your participation is important to us, but it is entirely voluntary. You do not have to take

this survey. You may complete any portion of the survey and stop at any time without penalty. You do not have to answer any questions you don't want to answer. You are free to ask questions and to withdraw from the survey at any time. Your participation or non-participation will not affect the services you receive on campus or your participation in other campus programs.

Contact Information Of Investigator:

If you have any questions or concerns regarding your participation in this survey, please contact:

Margaretha S. Lucas in 1122 Shoemaker Bldg., College Park, MD 20742, or by phone (301-314-7660) or email (mlucas1@umd.edu)

Sharon A. La Voy in 1101 Mitchell Bldg., College Park, MD 20742, or by phone (301-405-3828) or email (slavoy@umd.edu);

Contact Information of Institutional Review Board:

If you have any questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, MD 20742; email irb@deans.umd.edu; phone 301-405-0678.

By entering your Directory ID and password and completing some or all of the survey, you are indicating that you have read and understood the above information and that you have voluntarily chosen to participate in this project.

ERSITY STUDENT CENSUS AND DIVERSITY ASSESSMENT PROJECT

SURVEY INFORMED CONSENT FORM
Summer 2009

of Age: I state that I am at least 17 years of age, and wish to participate in a multi-year project being conducted on behalf of the University Counseling Center and the Office of the Senior Vice President for Academic Affairs and Provost by Margaretha S. Lucas (in her capacity as Assistant Director in the University Counseling Center and Associate Professor of the Department of Counseling and Personnel Services) and Sharon A. La Voy (in her capacity as Director of Assessment of the Office of Institutional Research, Planning & Assessment) and at the University of Maryland, College Park, Maryland 20742.

Purpose: This project will provide data for a variety of research and institutional purposes. For example, data from the project will help the University to learn about the college experiences, opinions and progress of students, and the effects of diversity. Data may also be used by different departments within the University for a variety of research and institutional purposes, such as enhancing our understanding of college students and what helps them succeed in school and what might cause difficulties, internal and external reporting, and improving the quality of the education, programs and services offered by the University.

Procedures: The procedures for this project involve completing one electronic survey. It is completed after New Student Orientation. It should take approximately 30 minutes to complete this survey.

Your directory and student ID will be used to link responses from each survey you complete to your other survey responses and to academic, financial and other information maintained by the University about you. This might include but not be limited to high school, race/citizenship, gender, date of birth, state of residence, major, SAT/ACT scores, high school GPA, financial aid awards, resident hall assignment.

Confidentiality: Information gathered for this project is confidential but not anonymous. Your name will not be collected or used, but your directory and student ID's will be used to merge your responses to the surveys and with other institutional data about you. Your information will be grouped with data provided by other students in the project for any published reports, presentations and/or publications, and no individual identities or individual responses will be included.

Risks: There are no known risks to individuals who complete the survey.

Benefits: There are no direct benefits to you as a participant in this project. This project is not designed to help you personally, but it may make a valuable contribution to the University's efforts to understand college students and their experiences; assess the impacts of diversity on educational experiences and outcomes; and may improve the quality of the education, programs and services that the University provides to its students.

Freedom to Withdraw And Ask Questions: Your participation is important to us, but it is entirely voluntary. You do not have to take this survey. You may complete any portion of the survey and stop at any time without penalty. You do not have to answer any questions you don't want to answer. You are free to ask questions and to withdraw from the survey at any time. Your participation or non-participation will not affect the services you receive on campus or your participation in other campus programs.

If you have any questions or concerns regarding your participation in this survey, please contact:

Margaretha S. Lucas in 1122 Shoemaker Bldg., College Park, MD 20742, or by phone (301-314-7660) or email (mlucas1@umd.edu)

Sharon A. La Voy in 1101 Mitchell Bldg., College Park, MD 20742, or by phone (301-405-3828) or email (slavoy@umd.edu);

Contact Information of Institutional Review Board:

If you have any questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, MD 20742; email irb@deans.umd.edu; phone 301-405-0678.

By entering your Directory ID and password and completing some or all of the survey, you are indicating that you have read and understood the above information and that you have voluntarily chosen to participate in this project.

Information regarding the project will also be shown on the Spring New Student Orientation website, in the following way:

Step 6. Complete the University Student Census. Each student is strongly encouraged to complete the University Student Census prior to the beginning of the Fall semester. The University Student Census is conducted on behalf of the University Counseling Center and the Office of the Senior Vice President for Academic Affairs and Provost. The project surveys experiences, opinions and progress of students and as such enhances understanding of college students and what helps them succeed in school. Please check back here June 3 to visit the website to complete the survey.

APPENDIX D: 2008 UNIVERSITY NEW STUDENT CENSUS

University of Maryland

New Student Census 2008

1. What is the highest level of education completed by each of your parents/guardians? (check one in each column)

	Mother/1st guardian	Father/2nd guardian
a. Less than high school diploma/GED		
b. High school diploma/GED		
c. Associate's degree		
d. Bachelor's degree		
e. Master's degree		
f. PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)		

2. Where were your parents/guardians born? (check one in each column)

	Born in the US	Born in a foreign country	Do NOT know
Mother/1st guardian			
Father/2nd guardian			

3. To the best of your knowledge, what is your combined annual parental income? (choose 1)

Please scroll to the appropriate amount

a. Less than $24,999
b. $25,000-$49,999
c. $50,000-$74,999
d. $75,000-$99,999
e. $100,000-$149,999
f. $150,000-$174,999
g. $175,000-$199,999
h. $200,000 and over
i. I don't know

4. Please indicate which of the following best describes the language(s) spoken on a regular basis in your home:

a. The primary language spoken in my home is English.
b. English AND some other language(s) are used in my home with equal frequency.
c. The primary language spoken in my home is NOT English.

5. Which best describes where you lived most of you life before college? (circle one)

a. Urban area
b. Suburban area
c. Small town
d. Rural area

6. What type of high school did you graduate from? (circle one)

a. Public
b. Private/Religious
c. Private/Nonreligious
d. Home school
e. I have a GED

7. What is the highest academic degree that you intend to obtain? (circle one)

a. Do NOT expect to complete a degree
b. Associate's (AA or equivalent)
c. Bachelor's (BA or BS)
d. Master's (MA, MS or MEd)
e. Doctoral (PhD, EdD)
f. Law (LLB, JD)
g. Medical (MD, OD, DDS, or DVM)
h. Divinity (BD or MDiv)
i. I do not know.

8. Of the schools you applied to, this college is your: (circle one)

a. 1st choice
b. 2nd choice
c. 3rd choice
d. Lower than 3rd choice

Rosenberg Self Esteem Scale

9. Below is a list of statements dealing with your general feelings about yourself. Please indicate the extent to which you agree or disagree with each statement on the following four point scale.

Strongly agree=4
Agree=3
Disagree=2
Strongly disagree=1

a.	On the whole, I am satisfied with myself	1	2	3	4
b.	At times, I think I am no good at all	1	2	3	4
c.	I feel that I have a number of good qualities	1	2	3	4
d.	I am able to do things as well as most other people	1	2	3	4
e.	I feel I do not have much to be proud of	1	2	3	4
f.	I certainly feel useless at times	1	2	3	4
g.	I feel that I'm a person of worth, at least on an equal plane with others	1	2	3	4
h.	I wish I could have more respect for myself	1	2	3	4
i.	All in all, I am inclined to feel that I am a failure	1	2	3	4
j.	I take a positive attitude toward myself	1	2	3	4

Attitudes Toward Seeking Professional Help

10. Rate each of the statements on the following four point scale:

Strongly disagree=1, Disagree=2, Agree=3, Strongly agree=4

a. If I believed I was having a mental breakdown, my first inclination would be to get professional attention 1 2 3 4
b. The idea of talking about problems with a psychologists strikes me as a poor way to get rid of emotional conflicts 1 2 3 4
c. If I were experiencing a serious emotional crisis at this point in my life, I would be confident that I could find relief in psychotherapy 1 2 3 4
d. There is something admirable in the attitude of a person who is willing to cope with his or her conflicts and fears without resorting to professional help 1 2 3 4
e. I would want to get psychological help if I were worried or upset for a long period of time 1 2 3 4
f. I might want to have psychological counseling in the future 1 2 3 4
g. A person with an emotional problem is not likely to solve it alone; he or she is likely to solve it with professional help 1 2 3 4
h. Considering the time and expense involved in psychotherapy, it would have doubtful value for a person like me 1 2 3 4
i. A person should work out his or her own problems; getting psychological counseling would be a last resort 1 2 3 4
j. Personal and emotional troubles, like many things, tend to work out by themselves 1 2 3 4

Diffused Identity Scale

11. Please indicate how much you agree or disagree with these items, based on the following five-point scale:

Strongly disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly agree=5

a. I refuse to believe a problem will happen, and things manage to work themselves out 1 2 3 4 5
b. Many times by NOT concerning myself with personal problems, they work themselves out 1 2 3 4 5
c. I'm NOT really thinking about my future now; it's a long way off 1 2 3 4 5
d. I try NOT to think about or deal with problems as long as I can 1 2 3 4 5
e. When I have a decision to make, I try to wait as long as possible in order to see what will happen 1 2 3 4 5

Multidimensional Scale of Perceived Social Support

12. Please indicate how much you agree or disagree with these items based on the following scale::

Strongly disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly agree=5

a. There is a special person who is around when I am in need 1 2 3 4 5
b. There is a special person with whom I can share my joys and sorrows 1 2 3 4 5
c. My family really tries to help me 1 2 3 4 5
d. I get the emotional help and support I need from my family 1 2 3 4 5
e. I have a special person who is a real source of comfort to me 1 2 3 4 5
f. My friends really try to help me 1 2 3 4 5
g. I can count on my friends when things go wrong 1 2 3 4 5
h. I can talk about my problems with my family 1 2 3 4 5
i. I have friends with whom I can share my joys and sorrows 1 2 3 4 5
j. There is a special person in my life who cares about my feelings 1 2 3 4 5
k. My family is willing to help me make decisions 1 2 3 4 5
l. I can talk about my problems with my friends 1 2 3 4 5

Entitlement Scale

13. Please indicate how much you agree or disagree with the following:

Strongly agree=5
Agree=4
Neutral=3
Disagree=2
Strongly disagree=1

a. Most of the times when I want something I make sure I get it right away 1 2 3 4 5
b. I expect a lot from other people 1 2 3 4 5
c. I will not be satisfied until I get all I deserve 1 2 3 4 5

Career Futures Inventory

14. Please indicate how much you agree or disagree with these items based on the following scale:

Strongly agree=5
Agree=4
Neutral=3
Disagree=2
Strongly disagree=1

a. I will be good at adapting to new work settings 1 2 3 4 5
b. I can adapt to change in my career plans 1 2 3 4 5
c. I can overcome potential barriers that may exist in my career 1 2 3 4 5
d. I enjoy trying new work-related tasks 1 2 3 4 5
e. I will be able to adapt to change in the world of work 1 2 3 4 5
f. I will adjust easily to shifting demands at work 1 2 3 4 5
g. Others would say that I am adaptable to change in my career plans 1 2 3 4 5
h. My career success will be determined by my efforts 1 2 3 4 5
i. Even if my career plans don't work out quite right, I will bounce back 1 2 3 4 5
j. I am rarely in control of my career 1 2 3 4 5
k. I am not in control of my career success 1 2 3 4 5
l. I get excited when I think about my career 1 2 3 4 5
m. Thinking about my career inspires me 1 2 3 4 5
n. Thinking about my career frustrates me 1 2 3 4 5
o. It is difficult for me to set career goals 1 2 3 4 5
p. It is difficult to relate my abilities to a specific career plan 1 2 3 4 5
q. I understand my work-related interests 1 2 3 4 5
r. I am eager to pursue my career dreams 1 2 3 4 5
s. I am unsure of my future career success 1 2 3 4 5
t. It is hard to discover the right career 1 2 3 4 5
u. Planning my career is a natural activity 1 2 3 4 5
v. I will definitely make the right decisions in my career 1 2 3 4 5

Life Satisfaction Scale

17. Please indicate how much you agree or disagree with the following:

Strongly agree=7
Agree=6
Slightly agree=5
Neither Agree nor disagree=4
Slightly disagree=3
Disagree=2
Strongly disagree = 1

a.	In most ways my life is close to my ideal	1	2	3	4	5	6	7
b.	The conditions of my life are excellent	1	2	3	4	5	6	7
c.	I am satisfied with my life	1	2	3	4	5	6	7
d.	So far I have gotten the important things I want in life	1	2	3	4	5	6	7
e.	If I could live my life over, I would change almost nothing	1	2	3	4	5	6	7

COPE Scale

18. Please indicate how you have dealt with stressful events in the past year.

Very often = 4
Often = 3
Sometimes = 2
Never = 1

a.	I've been turning to work or other activities to take my mind off things	1	2	3	4
b.	I've been using alcohol or other drugs to make myself feel better	1	2	3	4
c.	I've been getting help and advice from other people	1	2	3	4
d.	I've been using alcohol or other drugs to help me get through it	1	2	3	4
e.	I've been trying to come up with a strategy about what to do	1	2	3	4
f.	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping	1	2	3	4
g.	I've been trying to find comfort in my religion or spiritual beliefs	1	2	3	4
h.	I've been trying to get advice or help from other people about what to do	1	2	3	4
i.	I've been thinking hard about what steps to take	1	2	3	4
j.	I've been praying or meditating	1	2	3	4

Parental Fostering of Autonomy Scale

19. Please describe your parents or the parent you feel closest to:

In general, my parent(s):	Not at all=1	Somewhat=2	A moderate amount=3	Quite a bit=4	Very much=5
a. respect my privacy	1	2	3	4	5
b. restrict my freedom or independence	1	2	3	4	5
c. take my opinions seriously	1	2	3	4	5
d. encourage me to make my own decisions	1	2	3	4	5
e. are critical of what I can do	1	2	3	4	5
f. impose their ideas and values on me	1	2	3	4	5
g. are persons to whom I can express differences of opinion on important matters	1	2	3	4	5
h. have provided me with the freedom to experiment and learn things on my own	1	2	3	4	5
i. have trust and confidence in me	1	2	3	4	5
j. try to control my life	1	2	3	4	5
k. give me advice whether or not I want it	1	2	3	4	5
l. respect my judgment and decisions, even if different from what they would want	1	2	3	4	5
m. do things for me, which I could do for myself	1	2	3	4	5
n. treat me like a younger child	1	2	3	4	5

Brief Fear of Negative Evaluation Scale *indicates items on the B-FNE-S

20. Read each statement carefully and indicate how CHARACTERISTIC it is of you:

	Not at all=1	Slightly=2	Moderately=3	Very=4	Extremely=5
* a. I am frequently afraid of other people noticing my shortcomings	1	2	3	4	5
* b. I am afraid that others will not approve of me	1	2	3	4	5
* c. I am afraid that people will find fault with me	1	2	3	4	5
* d. I worry about what other people will think of me even when I know it doesn't make any difference	1	2	3	4	5
* e. When I am talking to someone, I worry about what they may be thinking about me	1	2	3	4	5
f. I worry about what kind of impression I make on people	1	2	3	4	5
g. If I know someone is judging me, it tends to bother me	1	2	3	4	5
* h. I often worry that I will say or do the wrong things	1	2	3	4	5
i. It bothers me when people form an unfavorable impression of me	1	2	3	4	5
* j. I am concerned about other people's opinions of me	1	2	3	4	5
* k. Sometimes I think I am too concerned with what other people think of me	1	2	3	4	5

Social Physique Anxiety Scale

21. Read each statement carefully and indicate how CHARACTERISTIC it is of you.

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

a. I wish I wasn't so uptight about my physique/figure 1 2 3 4 5

b. 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

c. Unattractive features of my physique/figure make me nervous in certain social settings 1 2 3 4 5

d. In the presence of others, I feel apprehensive about my physique/figure 1 2 3 4 5

e. I am comfortable with how fit my body appears to others 1 2 3 4 5

f. It would make me uncomfortable to know others were evaluating my physique/figure 1 2 3 4 5

g. When it comes to displaying my physique/figure to others, I am a shy person 1 2 3 4 5

Motivated Strategies for Learning Questionnaire

22. Read the following statements and circle the number that best ranks your behavior for the given question:

Always true = 5
True sometimes = 4
Neutral = 3
Not true most of the times = 2
Not at all true =1

a. I prefer educational material that really challenges me so I can learn new things 1 2 3 4 5
b. I prefer educational material that arouses my curiosity, even if it is difficult to learn 1 2 3 4 5
c. The most satisfying thing for my education is trying to understand the content as thoroughly as possible 1 2 3 4 5
d. When I have the opportunity, I choose assignments that I can learn from even if they don't guarantee a good grade 1 2 3 4 5
e. Getting good grades is the most satisfying thing for my education right now 1 2 3 4 5
f. The most important thing for me right now is my grade point average, so my main concern is getting good grades 1 2 3 4 5
g. I want to get better grades than most of the other students 1 2 3 4 5
h. I want to do well educationally because it is important to show my ability to my family, friends, employer, or others 1 2 3 4 5

23. Please answer these questions using the following scale:

1 = never

2 = sometimes

3 = almost always or always

a. How often do you think about recycling/ sustainability?

b. How often do you participate in recycling efforts toward sustainability?

24. Please indicate how frequently in the PAST YEAR, if at all, you engaged in the behaviors below (circle one for each item):

Daily=5
A few times per week=4
A few times per month=3
A few times per year=2
Never=1

a.	Participated in online gambling	1	2	3	4	5
b.	Drank alcohol	1	2	3	4	5
c.	Drank 5 or more alcoholic drinks in a single day	1	2	3	4	5

Interracial Climate Association Scale (subscale)

25. Think about the **HIGH SCHOOL YOU GRADUATED FROM**. Please indicate how much you agree or disagree with the following:

Strongly agree=4
Agree=3
Disagree=2
Strongly disagree=1

a.	I talked to students of different races only when I had to	1	2	3	4
b.	My friends would have thought badly of me if I ate lunch with a student of a different race	1	2	3	4
c.	I often went through a whole school day and never said more than a few words to a student of a different race	1	2	3	4
d.	You had to be a particular race to get any privileges at that school	1	2	3	4
e.	People of different races just didn't like being together	1	2	3	4
f.	My teachers thought that students should sit only with other students of their own race	1	2	3	4
g.	Students didn't like for other students to include people of different races in their activities	1	2	3	4
h.	Students of different races didn't have much to do with each other at that school	1	2	3	4
i.	White students disliked other students who spent too much time with their friends from other races	1	2	3	4

Precollege environment - Diversity Composition

26. How would you describe the racial/ethnic composition of the following: (People of color include African Americans, Hispanics, Asian Americans and American Indians) (circle one for each item):

All or nearly all white=5
Mostly white=4
Half white and half people of color=3
Mostly people of color=2
All or nearly all people of color=1

a.	Neighborhood where you grew up	1	2	3	4	5
b.	High school that you graduated from	1	2	3	4	5
c.	Your friends in high school	1	2	3	4	5
d.	Your friends in the neighborhood where you grew up	1	2	3	4	5

Multigroup Ethnic Identity Measure - Revised

27. Please indicate the extent to which each of the following statements describes your experiences of community with the ethnic group to which you self-identify.

Strongly agree=5
Agree=4
Neutral=3
Disagree=2
Strongly disagree=1

a. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs 1 2 3 4 5
b. I have a strong sense of belonging to my own ethnic group 1 2 3 4 5
b. I understand pretty well what my ethnic group membership means to me 1 2 3 4 5
c. I have often done things that will help me understand my ethnic background better 1 2 3 4 5
d. I have often talked to other people in order to learn more about my ethnic group 1 2 3 4 5
e. I feel a strong attachment towards my own ethnic group 1 2 3 4 5

Other-Group Orientation

28. Please indicate the extent to which each of the following statements describes your experiences of community with other ethnic groups.

Strongly agree=5
Agree=4
Neutral=3
Disagree=2
Strongly disagree=1

f. I like meeting and getting to know people from ethnic groups other than my own 1 2 3 4 5
g. I feel it would be better if different ethnic groups didn't try to mix together 1 2 3 4 5
h. I often spend time with people from ethnic groups other than my own 1 2 3 4 5
i. I don't try to become friends with people from other ethnic groups 1 2 3 4 5
j. I am involved in activities with people from other ethnic groups 1 2 3 4 5
k. I enjoy being around people from ethnic groups other than my own 1 2 3 4 5

29. Please indicate how much you agree or disagree with the following:

Strongly agree=5
Agree=4
Neutral=3
Disagree=2
Strongly disagree=1

a. The different perspectives that students from diverse backgrounds bring to the campus are valued at this university 1 2 3 4 5
b. Students are treated fairly here regardless of their racial/ethnic background 1 2 3 4 5
c. This university fosters respect for cultural differences 1 2 3 4 5
d. This university has made a special effort to help racial and ethnic minority students feel like they "belong" on campus 1 2 3 4 5

Social Dominance Orientation

30. Please indicate how much you agree or disagree with the following:

Strongly agree=5
Agree=4
Neutral=3
Disagree=2
Strongly disagree=1

a. It is OK if some groups have more of a chance in life than others 1 2 3 4 5
b. It would be good if groups could be equal 1 2 3 4 5
c. No one group should dominate in society 1 2 3 4 5
d. We would have fewer problems if we treated people equally 1 2 3 4 5
e. Some groups of people are simply inferior to other groups 1 2 3 4 5
f. To get ahead in life, it is sometimes necessary to step on other groups 1 2 3 4 5

Universal Diverse Orientation (Universality

31. Please indicate how much you agree or disagree with the following:

Strongly disagree=1; Disagree=2; Neutral=3; Agree=4; Strongly agree=5

a.	I often feel irritated by persons of a different race	1	2	3	4	5
b.	Getting to know someone of another race is generally an uncomfortable experience for me	1	2	3	4	5
c.	I am only at ease with people of my own race	1	2	3	4	5
d.	It's really hard for me to feel close to a person from another race	1	2	3	4	5
e.	I am NOT likely to marry someone from a race different than my own	1	2	3	4	5
f.	My friends do NOT feel I should go to college	1	2	3	4	5
g.	My family has always wanted me to go to college	1	2	3	4	5
h.	If tutoring is available on campus at no cost, I would attend regularly	1	2	3	4	5
i.	I would probably NOT be able to continue my friendship with a friend whom I discovered was homosexual	1	2	3	4	5
j.	Relationships between people of the same gender are as acceptable as they are for heterosexual couples	1	2	3	4	5
k.	If I found out someone I knew was gay, lesbian, or bisexual, I would support them	1	2	3	4	5

Acculturative Stress - Environmental Subscale

32. Think about your life experiences and respond to each item using the 5 point scale below:

Not at all true of me=1; True for me=2; Neutral=3; Not true for me=4; Very true for me=5

a.	Because I am different, I do not get enough credit for the work I do	1	2	3	4	5
b.	I often feel ignored by people who are supposed to assist me	1	2	3	4	5
c.	I often feel that people actively try to stop me from advancing	1	2	3	4	5
d.	Many people have stereotypes about my culture or ethnic group and treat me as if they are true	1	2	3	4	5
e.	In looking for a job, I sometimes feel that my ethnicity is or will be a limitation	1	2	3	4	5
f.	I feel uncomfortable when others make jokes about or put down people of my ethnic background	1	2	3	4	5
g.	I have more barriers to overcome than most people	1	2	3	4	5
h.	Because of my ethnic background, I feel that others often exclude me from participating in their activities	1	2	3	4	5
i.	It bothers me to assimilate	1	2	3	4	5
j.	People look down upon me if I participate in customs of my culture	1	2	3	4	5

Social Desirability Scale

33. Read each item and decide whether the statement is true or false as it pertains to you

a. I never hesitate to go out of my way to help someone in trouble. (T/F)

b. I have never intensely disliked anyone. (T/F)

c. There have been times when I was quite jealous of the good fortune of others. (T/F)

d. I would never think of letting someone else be punished for my wrong doings. (T/F)

e. I sometimes feel resentful when I don't get my way. (T/F)

f. There have been times when I felt like rebelling against people in authority even though I knew they were right. (T/F)

g. I am always courteous, even to people who are disagreeable. (T/F)

h. When I don't know something I don't at all mind admitting it. (T/F)

i. I can remember "playing sick" to get out of something. (T/F)

j. I am sometimes irritated by people who ask favors of me. (T/F)

34. Please answer both A & B:

A) Are you of Hispanic/Latino descent? yes ____ no____

If "yes," are you [check all that apply]:

___Central American

___Cuban

___Mexican American, Chicano

___Puerto Rican

___Other Hispanic or Latino

B) Please indicate one or more races that you consider yourself to be [check all that apply]:

-- American Indian or Alaska Native

-- Asian

-- Black or African American

-- Native Hawaiian or Other Pacific Islander

-- White

35. If you are Asian, are you…

____Indian

____Chinese

____Filipino

____Japanese

____Korean

____Vietnamese

____Other Asian

36. What is your gender? (circle one)

a. Female
b. Male
c. Transgender

37. In terms of sexual orientation labeling, I refer to myself as:

Heterosexual or Straight

Lesbian

Gay

Bisexual

Queer

Questioning

Same-Sex Oriented or Attracted

Other, please specify

38. Social class of your parent(s)/ guardian(s) while you were growing up:

Lower class

Working class

Middle class

Upper middle class

Upper class

39. Which of the following best describes your disability? (circle all that apply)

a. Deaf/Hard of Hearing
b. Blind/Severe Visual Impairment
c. Learning Disabled
d. Medical/Other
e. Physical disability
f. Attention Deficit Disorder
g. Attention Deficit Hyperactivity Disorder
h. Psychological
i. Other, please specify _____
j. I have none of the disabilities listed

Height

40. Please indicate your height in feet and inches.

_____feet, _____ inches.

__ Choose not to respond

Weight

41. Please estimate your weight in pounds (lbs).

_____lbs

__Choose not to respond

42. What is your current religious preference? (circle one)

a. Agnostic
b. Atheist
c. Roman Catholic
d. Greek Orthodox
e. Protestant (e.g. Baptist, Presbyterian, Methodist, Episcopalian, Lutheran, other Christian denominations)
f. Islam/Muslim
g. Jewish
h. Mormon
i. Hindu

j. Buddhist

k. None

l. I do not know.

m. Other, please specify _____

43. Which of the following best describes your living situation during your first year of college? (circle one)

a. With parents or relatives

b. Off-campus (NOT with parents)

c. Residence hall

d. Other campus housing

APPENDIX E: 2009 UNIVERSITY NEW STUDENT CENSUS

Census 09

What is the highest level of education completed by each of your parents/ guardians?

	Mother/1st guardian	Father/2nd guardian
Less than high school diploma/GED		
High school diploma/GED		
Associate degree		
Bachelor's degree		
Master's degree		
PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)		

Where were your parents/guardians born?

	Mother/1st guardian	Father/2nd guardian
In the U.S.		
In a foreign country		
I do not know		

What was the social class of your parent(s)/ guardian(s) while you were growing up:

Lower class
Working class
Middle class
Upper middle class
Upper class

Which of the following best describes the language(s) spoken in your home?

The primary Language spoken in my home is English

English and another language are spoken in my home with equal frequency

The primary language spoken in my home is not English

When filling out my college applications, I received (check all that apply)

(No help/Help from)

Parent(s)

Counselor

Friend

Other

I am the first one in my immediate family (i.e., parents, grandparents, siblings) to go to college

Yes No

My family has always wanted me to go to college

Yes No

My friends do not feel I should go to college

Yes No

Which of the following best describes your living situation during your first year of college? (circle one)

With parents or relatives
Off-campus (NOT with parents)
Residence hall
Other campus housing

What is the highest level of education you plan to complete? (Check one)

Associate degree

Bachelor's degree

Master's degree

PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)

What is the highest level of education your parents expect you to complete? (Check one)

Associate degree

Bachelor's degree

Master's degree

PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)

How would you characterize each of the following as sources to pay for your college education?

	not a source	minor source	major source
Scholarships			
Grants			
Loans			
Parents			
Off-campus job full part time			
On-campus job full part time			
Savings/stocks/bonds			
Military benefits			

According to University of Maryland policy, what minimum GPA do you need to remain in good academic standing?

a. There is no minimum GPA required

b. Minimum cumulative GPA of 1.5
c. Minimum cumulative GPA of 2.0
d. Minimum cumulative GPA of 2.5
e. I don't know

Please indicate the extent you agree or disagree with each of the following statements.

1 strongly disagree disagree neutral agree 5 strongly agree

In high school:

1. I had a study plan for every day of the week
2. I handed in assignments on time
3. I studied with the radio, computer and TV turned off
4. I went to class, but I often felt lazy and bored there
5. I seemed to get the wrong material into my class notes
6. I wrote down the material that my instructor put on the board or overhead
7. I didn't know how to pick out what was important in the text.
8. If I couldn't remember what I read, I went back and tried to sort it out.
9. When my teacher assigned a paper I did not know how to get started.
10. I usually wrote multiple drafts of a paper
11. I understood math problems when they were explained in class, but when I went home I no longer understood them
12. I was not as good in math as others in my class.
13. While taking a test I would keep thinking about the questions I could not answer.
14. I studied enough for test, but when I get there my mind would go blank.
15. I did not have trouble knowing what to study for an exam

Please indicate the extent you agree or disagree with each of the following statements.

1= Strongly Agree 2= Agree 3= Neutral 4= Disagree 5= Strongly Disagree

1. In my high school, I was able to learn about different cultures.
2. In my high school, I was able to gain a better understanding and appreciation of other cultures.
3. In my high school, I was able to engage in discussions that bring in multiple perspectives.
4. In my high school, I was challenged to critically examine my own beliefs regarding race and ethnicity.
5. In my high school, I interacted with students from racial or ethnic backgrounds different from my own.

1. The different perspectives that students from diverse backgrounds brought to my high school were valued.
2. Students were treated fairly in my high school regardless of their racial/ethnic background.
3. My high school fostered respect for cultural differences.
4. Students were encouraged to discuss a range of ideas and to explore diverse perspectives in their courses in my high school.
5. My high school made a special effort to help racial and ethnic minority students feel like they "belong" there.
6. My high school actively promoted appreciation for diversity through clubs and school wide events.

1= Strongly Agree 2= Agree 3= Neutral 4= Disagree 5= Strongly Disagree

1. There was a lot of racial conflict in my high school.
2. Discrimination was a problem in my high school.
3. My high school did not tolerate discrimination.
4. I witnessed acts of discrimination towards students in my high school.
5. Acts of discrimination were taken seriously by school officials.
6. School officials actively worked to stop and prevent discrimination.
7. People seemed to get away with acts of discrimination in my high school.

How would you describe the racial/ethnic composition of the following: (People of color include African Americans, Hispanics, Asian Americans and American Indians)

All or nearly all people of color
Mostly people of color
Half white and half people of color
Mostly white

All or nearly all white

1. Neighborhood where you grew up
2. High School that you graduated from
3. Your friends in high school
4. Your friends in the neighborhood where you grew up

Would you say the racial/ethnic composition of the high school you graduated from was

1. Mostly White
2. Mostly Black/African American
3. Mostly Hispanic
4. Mostly Asian
5. Mostly Native American
6. No single majority racial/ethnic group

Please indicate how often you did the following during high school:

1= Never 2= Seldom 3= Sometimes 4= Often 5= Very Often

1. Actively participated in an organization that promotes cultural diversity
2. Engaged in discussions about racial/ethnic issues in class
3. Participated in organized discussions on racial/ethnic issues outside of class
4. Worked in small, ethnically diverse groups with other students in class

Please indicate how much you agree or disagree with each of the following statements

1= Strongly disagree disagree neutral agree 5= strongly agree

1. I have always more or less operated according to the values with which I was brought up
2. Regarding religion, I have always known what I believe and don't believe; I never really had any serious doubts
3. I think it is better to have a firm set of beliefs than to be open minded
4. I prefer to deal with situations where I can rely on social norms and standards
5. I've always had a purpose in my life; I was brought up to know what to strive for.
6. I think it is better to have fixed values than to consider alternative systems

Please indicate how much you agree or disagree with each of the following statements:

1= Strongly disagree disagree neutral agree 5= strongly agree

When I attend the University of Maryland:

1. There are several people I trust to help solve my problems.
2. There is someone I can turn to for advice about making very important decisions.
3. There is no one that I feel comfortable talking to about intimate personal problems.
4. When I feel lonely, there are several people I can talk to.
5. If I needed an emergency loan of $500, I know someone I can turn to.
6. The people I interact with would put their reputation on the line for me.
7. The people I interact with would be good job references for me.
8. The people I interact with would share their last dollar with me.
9. I do not know people well enough to get them to do anything important.
10. The people I interact with would help me fight an injustice.
11. I know where to get help if I have academic difficulties in college
12. I know how to get a tutor in college

Please indicate how much you agree or disagree with each of the following statements

STRONGLY DISAGREE				Neutral			STRONGLY AGREE
1	2	3	4	5	6	7	

1. I am often surprised when I perform well on a project or a test.
2. It is easy for me to give myself credit for the good things that happen to me, professionally or socially.
3. If I receive a great deal of praise and recognition for something I've accomplished, I tend to belittle the significance of what I have done.
4. I often generalize negative feelings about myself which stem from a specific incident or situation to other, sometimes unrelated, situations.
5. After having had a meeting with a professor or a supervisor, I often feel that I said something that was inappropriate or uninformed.
6. When I receive a compliment about my academic or professional abilities, I sometimes find myself making excuses for and explaining away the compliment.

Indicate how true each of the following is for you

Not at All True of me	Slightly True of me	Moderately True of me	Quite a Bit True of me	Very True of me
1	2	3	4	5

1. I hope to become a leader in my career field.
2. When I am established in my career, I would like to manage other employees.
3. I would be satisfied just doing my job in a career I am interested in.
4. I do not plan to devote energy to getting promoted in the organization or business I am working in.
5. When I am established in my career, I would like to train others.
6. I hope to move up through any organization or business I work in.
7. Once I finish the basic level of education needed for a particular job, I see no need to continue in school.
8. I plan on developing as an expert in my career field.
9. I think I would like to pursue graduate training in my occupational area of interest.
10. Attaining leadership status in my career is not that important to me.

ROSENBERG SELF ESTEEM SCALE

Please indicate how much you agree or disagree with each of the following statements

1 = Strongly Disagree
2 = Disagree
3 = Agree
4 = Strongly Agree

1. On the whole, I am satisfied with myself
2. At times, I think I am no good at all
3. I feel that I have a number of good qualities
4. I am able to do things as well as most other people
5. I feel I do not have as much to be proud of
6. I certainly feel useless at times
7. I feel that I'm a person of worth, at least on an equal plane with others
8. I wish I could have more respect for myself
9. All in all, I am inclined to feel that I am a failure
10. I take a positive attitude toward myself

MULTIGROUP ETHNIC IDENTITY MEASURE-REVISED

Please indicate how much you agree or disagree with the following:

Strongly disagree	*1*
Disagree	*2*
Neutral	*3*

Agree *4*
Strongly agree *5*

1. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.
2. I have a strong sense of belonging to my own ethnic group.
3. I understand pretty well what my ethnic group membership means to me.
4. I have often done things that will help me understand my ethnic background better.
5. I have often talked to other people in order to learn more about my ethnic group.
6. I feel a strong attachment towards my own ethnic group.
7. I like meeting and getting to know people from ethnic groups other than my own.
8. I feel it would be better if different ethnic groups didn't try to mix together.
9. I often spend time with people from ethnic groups other than my own.
10. I don't try to become friends with people from other ethnic groups.
11. I am involved in activities with people from other ethnic groups.
12. I enjoy being around people from ethnic groups other than my own.

BRIEF COPE SCALE

Please indicate how often you have done the following to deal with stressful events in the past year?

1= never 2= sometimes 3= often 4= very often

1. I've been turning to work or other activities to take my mind off things
2. I've been using alcohol or other drugs to make myself feel better
3. I've been getting help and advice from other people
4. I've been using alcohol or other drugs to help me get through it
5. I've been trying to come up with a strategy about what to do
6. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping
7. I've been trying to find comfort in my religion or spiritual beliefs
8. I've been trying to get advice or help from other people about what to do
9. I've been thinking hard about what steps to take
10. I've been praying or meditating

SOURCES OF MEANING IN LIFE

How important is each of the following as a source of meaning in your life?

Not at All			Somewhat			Very
1	2	3	4	5	6	7

1. Participation in leisure activities
2. Meeting basic, everyday needs
3. Taking part in creative activities
4. Engaging in personal relationships with family and/or friends
5. Being acknowledged for personal achievements
6. Experiencing personal growth
7. Taking part in religious activities
8. Interest in social causes
9. Being of service to others
10. Preserving human values and ideals
11. Preservation of culture and tradition
12. Leaving a legacy for the next generation
13. Feeling financially secure
14. Interest in human rights (Humanistic concerns)
15. Participation in "hedonistic" activities (e.g., Parties, etc.)
16. Acquiring material possessions in order to enjoy the good life

Race/ethnicity items

Colleges and universities are asked to describe the racial/ethnic background of their students and employees to agencies such as federal and state governments and national surveys.

Please make sure to answer <u>both</u> questions.

1. Are you of Hispanic or Latino origin? Yes No

Mexican, Mexican Am., Chicano
Puerto Rican
Cuban
Central America

Other Hispanic, Latino, or Spanish origin

(print here)

2. What is your race? Select one or more of the following categories.

White
American Indian or Alaska Native
Black or African American
Afro-Caribbean descent
Other
(print here)

Native Hawaiian or Other Pacific Islander
Asian
Asian Indian
Chinese
Filipino
Japanese
Korean
Vietnamese
Other Asian
(print here)

Definitions which should be available to respondent or added to questions

White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Black or African American: A person having origins in any of the black racial groups of Africa.

Hispanic or Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

American Indian or Alaska Native: A person having origins in any of the original peoples of North and South America (including Central America), and who maintains cultural identification through tribal affiliation or community attachment.

Native Hawaiian or Other Pacific Islander: A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Which of the following best describes a disability you may or might have? (circle all that apply)

- Deaf/hard of Hearing
- Blind/Severe Visual Impairment
- Learning Disabled
- Medical/Other
- Physical disability
- Attention Deficit Disorder
- Attention Deficit Hyperactivity Disorder
- Psychological
- Other, Please specify
- I have none of the disabilities listed

What is your current religious preference? (circle one)

- Agnostic
- Atheist
- Roman Catholic
- Greek Orthodox
- Protestant (e.g., Baptist, Presbyterian, Methodist, Episcopalian, Lutheran, other Christian denominations)
- Islam/Muslim
- Jewish
- Mormon
- Hindu
- Buddhist
- None
- I do not know.
- Other, please specify

In terms of sexual orientation labeling, I refer to myself as:

- Heterosexual or Straight
- Lesbian
- Gay
- Bisexual
- Queer
- Questioning
- Same-Sex Oriented or Attracted
- Other, please specify

BRIEF FEAR OF NEGATIVE EVALUATION SCALE

*** INDICATES ITEMS ON THE B-FNE-S**

Read each statement carefully and indicate how CHARACTERISTIC it is of you.

Not at all=1 slightly = 2 moderately = 3 very = 4 Extremely=5

1. * I am frequently afraid of other people noticing my shortcomings.
2. * I am afraid that others will not approve of me.
3. * I am afraid that people will find fault with me.
4. * I worry about what other people will think of me even when I know it doesn't make any difference.
5. * When I am talking to someone, I worry about what they may be thinking about me.
6. I worry about what kind of impression I make on people.
7. If I know someone is judging me, it tends to bother me.
8. * I often worry that I will say or do the wrong things.
9. It bothers me when people form an unfavorable impression of me.
10. * I am concerned about other people's opinions of me.
11. * Sometimes I think I am too concerned which what other people think of me.

SOCIAL PHYSIQUE ANXIETY SCALE

Read each statement carefully and indicate how CHARACTERISTIC it is of you.

Not at all=1 slightly = 2 moderately = 3 very = 4 Extremely=5

1. I wish I wasn't so uptight about my physique/figure
2. There are times when I am bothered by thoughts that other people are evaluating my weight
   or muscular development negatively
3. Unattractive features of my physique/figure make me nervous in certain social settings
4. In the presence of others, I feel apprehensive about my physique/figure
5. I am comfortable with how fit my body appears to others
6. It would make me uncomfortable to know others were evaluating my physique/figure
7. When it comes to displaying my physique/figure to others, I am a shy person

MULTIDIMENSIONAL ACCULTURATION SCALE

Culture of origin is the culture of the country either you or your parents or your

ancestors came from (i.e., Chinese or Mexican).

Do you identify with a culture of origin *Other* than U.S. American culture? Yes No

SKIP PATTERN: If ANSWER YES-complete the following (if ANSWER NO, see instructions below):

What is the ONE COUNTRY with the culture of origin that you relate to the most (NOT INCLUDING U.S. America)? _____

1 = strongly disagree 2 = disagree somewhat 3 = agree somewhat 4 = strongly agree

1. I think of myself as being U.S.-American.
2. I feel good about being U.S.-American.
3. Being U.S.-American plays an important part in my life.
4. I feel that I am part of U.S.-American culture.
5. I have a strong sense of being U.S.-American.
6. I am proud of being U.S.-American.
7. I think of myself as being a member of my culture of origin.
8. I feel good about being a member of my culture of origin.
9. Being a member of my culture of origin plays an important part in my life.
10. I feel that I am part of my culture of origin.
11. I have a strong sense of being of my culture of origin.
12. I am proud of being of my culture of origin.

Circle the response from the scale that best corresponds to your answer.

1= not at all 2= a little 3 = pretty well 4 = extremely well

HOW WELL DO YOU SPEAK ENGLISH
13. at school or work
14. with American friends
15. on the phone
16. with strangers
17. in general

HOW WELL DO YOU UNDERSTAND ENGLISH
18. on television or in movies
19. in newspapers and magazines
20. words in songs
21. in general

Native language is the language of your culture of origin, spoken by you or your parents or ancestors in that country.

HOW WELL DO YOU SPEAK YOUR NATIVE LANGUAGE

22. with family
23. with friends from the same country as you
24. on the phone
25. with strangers
26. in general

HOW WELL DO YOU UNDERSTAND YOUR NATIVE LANGUAGE

27. on television or in movies
28. in newspapers and magazines
29. words in songs
30. in general

HOW WELL DO YOU KNOW:

31. American national heroes
32. popular American television
33. popular American newspapers and magazines
34. popular American actors and actresses
35. American history
36. American political leaders
37. national heroes from your native culture
38. popular television shows in your native language
39. popular newspapers and magazines in your native language
40. popular actors and actresses from your native culture
41. history of your native culture
42. political leaders from your native culture

SKIP PATTERN: IF ANSWERED "NO" TO "Do you identify with a culture <u>*Other*</u> than U.S. American culture?"-*complete the following:*

1 = strongly disagree 2 = disagree somewhat 3 = agree somewhat 4 = strongly agree

1. I think of myself as being U.S.-American.
2. I feel good about being U.S.-American.
3. Being U.S.-American plays an important part in my life.
4. I feel that I am part of U.S.-American culture.
5. I have a strong sense of being U.S.-American.
6. I am proud of being U.S.-American.

Circle the response from the scale that best corresponds to your answer.

1= not at all 2= a little 3 = pretty well 4 = extremely well

HOW WELL DO YOU KNOW:

31. American national heroes
32. popular American television

33. popular American newspapers and magazines
34. popular American actors and actresses
35. American history
36. American political leaders

APPENDIX F: CORRELATIONS BETWEEN ENTRY YEAR AND AVERAGE SCORES BY RACE

Appendix F

Correlations Between Average Scores on Each Measure and Year of Entry[1]*, By Race*

	Asian American	Black American	White American
Factor / Variable			
SE	-.24**	.05	-.16**
SPA	.08	.04	.13**
FNE	.15*	.17*	.16**
EI Exp	-.07	-.07	.04
EI Comm	-.10	.08	.05
Income	.06	-.07	.09*

Note. n's vary due to missing data. SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.

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

[1]A positive relation means scores in Year 2009 were higher than scores in Year 2008; a negative relation means scores in Year 2008 were higher than scores in Year 2009.

APPENDIX G: RESPONSE RATES FOR ADDITIONAL RACIAL GROUPS

Appendix G

Response Rates for Students Identifying with Racial Groups Not Included in Current Study Analyses

Latin American

Year:	2008 (n = 17)		2009 (n = 16)	
	n	%	*n*	%
Income	16	94	16	100
BMI	13	76	not administered	
Height	16	94	not administered	
Weight	13	76	not administered	
SE	16	94	15	94
SPA	17	100	16	100
FNE	17	100	16	100
EI Exp	17	100	16	100
EI Comm	17	100	16	100

Multiracial, with White indicated as a race

Year:	2008 (n = 81)		2009 (n = 71)	
	n	%	*n*	%
Income	76	93	69	97
BMI	67	83	not administered	
Height	81	96	not administered	
Weight	67	83	not administered	
SE	80	96	69	97
SPA	80	96	68	96
FNE	80	96	64	90
EI Exp	79	96	67	94
EI Comm	79	96	66	93

Note. Some participants did not indicate a race and are not listed in these tables (n = 221 in 2008 and n = 201 in 2009). BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.

Appendix G (continued)
Response Rates for Students Identifying with Racial Groups Not Included in Current Study Analyses

Multiracial, with White not indicated as a race

Year:	2008 (n = 27)		2009 (n = 13)	
	n	*%*	*n*	*%*
Income	26	96	12	93
BMI	25	93	not administered	
Height	26	96	not administered	
Weight	25	93	not administered	
SE	27	100	13	100
SPA	26	96	12	93
FNE	25	93	12	93
EI Exp	26	96	12	93
EI Comm	26	96	12	93

American Indian

Year:	2008 (n = 2)		2009 (n = 1)	
	n	*%*	*n*	*%*
Income	2	100	1	100
BMI	2	100	not administered	
Height	2	100	not administered	
Weight	2	100	not administered	
SE	2	100	1	100
SPA	2	100	1	100
FNE	2	100	1	100
EI Exp	2	100	1	100
EI Comm	2	100	1	100

Note. Some participants did not indicate a race and are not listed in these tables (n = 221 in 2008 and n = 201 in 2009). BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.

Appendix G (continued)
Response Rates for Students Identifying with Racial Groups Not Included in Current Study Analyses

	Foreign (not U.S. citizen)			
Year:	2008 (n = 9)		2009 (n = 5)	
	n	*%*	*n*	*%*
Income	9	100	5	100
BMI	4	50	not administered	
Height	7	80	not administered	
Weight	4	50	not administered	
SE	9	100	5	100
SPA	8	90	5	100
FNE	8	90	5	100
EI Exp	9	100	5	100
EI Comm	9	100	5	100

Note. Some participants did not indicate a race and are not listed in these tables (n = 221 in 2008 and n = 201 in 2009). BMI = Body Mass Index; SE = Self Esteem; SPA = Social Physique Anxiety; FNE = Fear of Negative Evaluation; EI Exp = Ethnic Identity Exploration; EI Comm = Ethnic Identity Commitment.

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