

WEIGHT PERCEPTION OVERESTIMATION AS A PREDICTOR FOR  
DISORDERED EATING BEHAVIORS AMONG COLLEGE WOMEN

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## **ABSTRACT**

### **WEIGHT PERCEPTION OVERESTIMATION AS A PREDICTOR FOR DISORDERED EATING BEHAVIORS AMONG COLLEGE WOMEN**

by

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This study examined the relationship between disordered eating behaviors and body weight perception among normal weight college women. Additionally, the demographic variables of relationship status and ethnicity were also explored. These objectives were achieved by examining scores on the Eating Attitudes Test and responses about body weight perception, relationship status, and ethnicity. Analysis revealed that overestimation emerged as a significant predictor of disordered eating symptomatology.

## CHAPTER I

### INTRODUCTION

Young women across the nation are preoccupied with weight concerns (Wardle, Haase, & Steptoe, 2006). The media is frequently cited as responsible for setting forth unrealistic thin weight ideals (Showers & Larson, 1999). In order to achieve the cultural icon of thinness, some females engage in disordered eating behaviors. These behaviors include fasting, self induced vomiting, reduction of total food intake, exclusion of foods high in calories, and the use of diuretics and laxatives (Harris, 1995). The emergence of such types of unhealthy eating behaviors is typically the result of an abnormal perception of body size (Gucciardi, Wang, Badiani, & Stewart, 2007).

Considerable research has been conducted on the association between self perceived weight status and actual weight status. The degree in which individuals underestimate or overestimate their physical weight is typically investigated (Conley & Boardman, 2007). In general, underestimation is more common than overestimation (Standley, Sullivan, & Wardle, 2009). Further, discrepancies between perception of body weight and actual body weight have been found to be more common among certain subgroups of the population (Shapiro & Anderson, 2003). Males, overweight individuals, and obese individuals frequently underreport their weight (Abraham, Luscombe, Boyd, & Olesen, 2004; Birtchnell, Dolan, & Lacey 1987; Haring, Montgomery, & Hardin, 2010; McCabe, McFarlane, Polivy, & Olmsted, 2001; Standley et al., 2009). While these findings may offer important implications concerning the

obesity epidemic, obesity is still relatively uncommon among young adults (Wardle et al., 2006). Young adulthood is a key risk time for body image and eating disorder problems.

Those who suffer from eating disorders face a wide range of psychological and physiological problems. According to the American Psychiatric Association (1994), approximately 1% to 4% of young adult females have been diagnosed with anorexia nervosa and bulimia nervosa. A key diagnostic criterion for both of these eating disorders, as listed in the DSM-IV (1994) is a distorted evaluation of personal body size. The strong positive association between eating disorders and body size overestimation is further supported by the research literature (Dolce, Thompson, Register, & Spana, 1987). In a review of 44 studies, Farrell, Lee, and Shafran (2005) found that individuals diagnosed with anorexia nervosa and bulimia nervosa tends to overestimate their body size. However, body size overestimation is not restricted to only women with eating disorders (Birtchnell et al., 1987).

The majority of the past research on weight perception focuses on females with eating disorders. Far less research exists on non-disordered eating women (Conley & Boardman, 2007). In an early study conducted by Birtchnell et al. (1987), the researchers found that over perception of body size is also common in women with no current or previous history of eating disorders. For the reason that very little research exists, Conley and Boardman (2007) addressed the need for continued investigation on the relationship between overestimation and disordered eating symptomatology among normal weight women. The non-disordered eating college population may also benefit from such studies. Eating disordered behaviors are especially prevalent on college campuses (Harring et al., 2010; Harris, 1995). Moreover, normal weight women are considered to be more at risk for adopting poor eating behaviors. Women within the healthy weight range have been found to attempt weight loss more than

other groups (Gucciardi et al., 2007). Therefore, addressing body size overestimations may serve as a useful means in identifying those at risk for developing a serious eating disorder.

### Purpose and Significance of Study

The serious psychological and physiological implications associated with unhealthy weight management strategies warrant further efforts to identify those at risk for an eating disorder.

The current study investigates the relationship between disordered eating behaviors and perception of body weight among college aged females. There is a paucity of research on normal weight, non-disordered eating females who overestimate their body size. Additionally, the studies which exist typically rely on self reported height and weight to calculate body mass index (BMI). The research in this study attempts to build on the current literature by using an accurate measure of height and weight.

### Overview of the Methodology

This study is a quantitative study. Data were collected between the months of January and March. Students from a university completed a demographics form, a questionnaire, and their height and weight was measured.

### Research Questions and Hypotheses

This study examines the relationship between disordered eating behaviors and body weight perception. Specifically, the study investigates whether normal body mass index predicts overestimation of weight status, and whether overestimation of weight status predicts symptoms of disordered eating behaviors. The corresponding null hypotheses are provided below.

H<sub>0</sub>1: Normal body mass index will not predict overestimation of weight status.

H<sub>0</sub>2: Overestimation of weight status will not predict symptoms of disordered eating.

### Limitations and Delimitations

Due to constraints on time and resources, this study does involve some limitations. First of all, convenience sampling was used to select participants for this study. Thus, the sample may not be representative of the general population. However, the use of college students provides insight about eating behaviors among this group. Additionally, in order to determine the presence of disordered eating behaviors, scores were derived from responses on a questionnaire. Implicit measures may be subject to participant bias. However, such measures can still reveal a wealth of information. Moreover, the use of BMI may be considered a limitation. There is debate that the BMI does not account for body composition. However, clinical settings have affirmed that BMI is a good approximation for assessment. Further, due to the nature of the research questions, the sample size might be considered small. Finally, since the research design is correlational, casual inferences can not be made.

### Definitions of Key Terms

Below are the definitions of key terms, around which this thesis research is centered.

1. **Body Mass Index:** A weight-to-height ratio which is calculated by dividing an individual's weight in kilograms by the squared height in meters. It is used as a classification system for underweight, normal weight, overweight, and obese weight ranges.
2. **Disordered Eating:** Classification within the DSM-IV-TR used to describe irregular eating behaviors. These behaviors include fasting, self induced vomiting, reduction of total food intake, exclusion of foods high in calories, and the use of diuretics and laxatives (Harris, 1995).

3. Eating Disorder: Illness characterized by serious disturbances in eating behavior. Additionally, it is marked by distress or extreme concern about body shape or weight.
4. Overestimation: Perception of self as overweight when weight is considered to be normal or underweight, or perception of self as normal weight when weight is considered to be underweight, on the basis of BMI.
5. Underestimation: Perception of self as normal weight or underweight when weight is considered to be overweight, or perception of self as underweight when weight is considered to be normal weight, on the basis of BMI.

### Thesis Organization

This chapter introduces the purpose and significance of the study for this thesis project, an overview of the methodology, the research questions and hypotheses being tested, the limitations and delimitations of the study, and definitions of key terms that will be used repeatedly throughout this document. Chapter II is the review of the literature and elaborates on topics related to disordered eating behaviors and perception of body weight. The methodology for the study is described in Chapter III. In Chapter IV, the results obtained for the study are presented. The final chapter, Chapter V, provides a discussion of the results, implications for practice and further research, and overall conclusions.

## CHAPTER II

### LITERATURE

In today's society, the female body ideal has changed dramatically from what it used to be in the past. Once upon a time, larger body sizes were idealized. The ideal body transformed from large to thin in the mid 1990's (Neighbors & Sobal, 2007). At present, the media continually presents women who are below normal weight (Owen & Laurel-Seller, 2000). The pressure to be thin can lead to potentially dangerous behaviors which could progress to an eating disorder.

#### Eating Disorders

Extensive research exists on eating disorders. This category of disorders is considered to be one of the most widespread psychiatric issues facing girls and young adult women (Stice, 2002). Recent and past data indicate that adolescence and early adulthood are the two stages in which the development of eating disorders occurs most often (Hudson, Hiripi, Pope, & Kessler, 2007). In comparison to other female age groups, the prevalence of eating disorders is highest among adolescent and young adult females (Gucciardi et al., 2007).

The two most commonly diagnosed eating disorders include anorexia nervosa and bulimia nervosa. Anorexia nervosa is marked by emaciation, fear of becoming overweight and distorted perception of body shape, among others (Stice, 2002). In contrast, bulimia nervosa is characterized by binge eating that is out of control and

compensatory behavior to prevent weight gain. The two disorders share the criterion, undue influence of body shape on self-evaluation.

### Overestimation of Body Weight

The overestimation of body weight has been suggested as a key factor in the development and maintenance of eating disorders. The body of literature in this area is vast and has received great attention. The majority of the samples used in such research consist of eating disordered women. Body size is often overestimated among females who have been diagnosed with an eating disorder (Farrell et al., 2005). This is especially common in individuals with anorexia nervosa (Mussap, McCabe, & Ricciardelli, 2008). Recent studies have revealed that this phenomenon is not exclusive to women with eating disorders. Non-disordered eating females have been found to overestimate their body size (Harring et al., 2010).

Countless studies have examined discrepancies in self reported and measured height and weight. There is a general consensus that individuals tend to underestimate weight and overestimate their height (Abraham et al., 2004). There are several factors related to these inconsistencies. For instance, gender and body mass index appear to play a role. Females tend to perceive themselves as overweight (Steenhuis, Bos, & Mayer, 2006). Additionally, underweight and normal weight females, as determined by their BMI status, are more likely to perceive themselves as overweight Raudenbush & Zellner, 1997).

Recent studies have examined body weight perception in the population. The National Health and Nutrition Examination Survey (NHANES) 1999-2004 and the National College Health Assessment (NCHA) 2008 are two large scale surveys which



have provided insight on individuals who overestimate their weight. The NHANES reported that 33% of normal weight females perceived themselves as overweight. The NCHA found that 16.8% of underweight and overweight females considered themselves as overweight.

Smaller studies have also been conducted in this area. Harmatz (1987) reported that of the study sample, 36% of underweight and normal weight women overestimated their weight status. Unlike the previously mentioned studies, Conley and Boardman (2007) only investigated body weight perceptions among normal weight women. The researchers found that 22.3% of the women included in the sample population overestimated their weight status. Despite these findings, the literature on body weight perception in the non-disordered eating population remains limited (Dolan et al., 1987).

Students from universities have been studied. Weight concerns and eating problems is an issue on college campuses (Harris, 1995). The literature has confirmed that the college population has been identified as a group who are likely to adopt unhealthy eating behaviors (Gordon, Heath, Holmes, & Christy, 2000).

Steenhuis et al. (2006) assert that adequate perception of body weight is necessary to maintain a healthy weight. Inaccurate perception of body weight may influence an individual's weight management strategies (Harring et al., 2010). Misinterpretation of body weight, such as overestimation of one's physical weight, can lead to the emergence of disordered eating behaviors (Meyer, McPartlan, Sines, & Waller, 2009).

Weight loss is attempted most often by females who are considered to be in the healthy weight range (Ackard, Croll, & Kearney-Cooke, 2002; Gucciardi, Wang et al., 2007). Past research has reported that up to 47% of normal weight females and 32% of

normal weight girls express desires to lose weight and diet to achieve this goal (Biener & Heaton, 1995). The literature has found a positive association between weight loss history and overestimation of body weight (Blokstra, Burns, & Seidell, 1999; Steenhuis et al., 2006). Those who have a history of dieting are more likely to perceive themselves as overweight.

The literature mostly relies on self reported height and weight to determine BMI. This method is typically used because it is quick and cost effective (Shapiro & Anderson, 2003). Brener, McManus, and Galuska (2003) measured the reliability and validity of self reported height and weight among high school students. The researchers reported that the measured BMI in the population sample was approximately  $2.6 \text{ kg/m}^2$  higher than the self reported values. According to Shapiro and Anderson (2003), self reported height and weight is likely to be biased in high risk populations.

BMI is regularly used in studies of perception of body weight because it has been found to be an important predictor for weight overestimation (Steenhus et al., 2006). Further, Blokstra et al. (1999) established that BMI is a strong indicator of weight perception.

The research is well established in the area of eating disorders. However, there is far less research concerning non-disordered eating individuals. Additionally, even fewer studies examine normal weight females who overestimate their body weight. Further, the studies to date very seldom verify the accuracy of self reported height and weight among college females. For example, the recent large scale studies discussed previously, the NHANES and the NHCA, relied on self reported height and weight to derive BMI. Both studies acknowledged that the self reported data may have introduced biases.

This chapter reviewed the literature in relation to disordered eating behaviors and body weight perception. Underestimation and overestimation of body weight was addressed. The research highlights an interesting phenomenon. Normal weight women more often than the other weight range groups perceive themselves as overweight. Such inaccurate perceptions can lead to unhealthy weight management behaviors. Despite the data, continued research is needed to examine the role of weight perception among normal weight, non-disordered eating females and to add to the literature in regard to studies which use accurate measures of height and weight.

## CHAPTER III

### METHOD

The purpose of the study was to examine the relationship between disordered eating behaviors and perception of body weight. As such, this chapter aims to review the research methodology and procedures used in the study. The information covered will highlight the purpose and objectives of the study, the sample population, details on the instrumentation used, methods and procedures, and data analyses.

#### Research Perspective and Design

The current study utilizes a descriptive non-experimental design in which no causal attributions will be made. All variables of interest were measured.

#### Participants

The sample population consisted of students at Texas State University-San Marcos. Certain inclusion and exclusion criteria were set in place. Students were eligible to participate if they were female and between the ages of 18 to 24. Participation was voluntary and students received extra credit as an incentive. Data were gathered from 81 students for the study. However, data were analyzed only from those participants who were considered to be normal-weight, based on BMI. Therefore, the sample reduced to 43 students. The mean age of the sample was 19.7 ( $SD = 1.5$ ). Within the sample, 51.2% were Caucasian, 25.6% were Hispanic, 2.3% were Asian, 2.3% were Native American, 14% were African American, and 4.7% did not specify an ethnicity.

## Research Variables and Instruments

The main criterion variable was disordered eating symptomatology. The primary predictor variable was estimation of weight status. Relating to these variables, two types of data were collected. In order to determine the presence of disordered eating behavior, scores from the *Eating Attitudes Test - 26* (EAT-26, Garner et al., 1982) were obtained. Correspondingly, with the purpose of assessing estimation of weight status, responses concerning body weight perception were collected.

The EAT-26 is the most widely used screening measure for eating disorders (Ocker, Lam, Jensen, & Zhang, 2007). The instrument consists of 26 items representing three domains which include dieting, bulimia and food preoccupation, and oral control (see Appendix). In this study, subjects were directed to respond to each item on a 6-point Likert scale, per instructions on the self-report. Response options ranged from “never,” represented by a numerical value of 1 to “always,” represented by a numerical value of 6. This instrument has been found to have good reliability and validity (Garner et al., 1982). Further, a recent analysis of the EAT-26 reliability showed that the measure had a Cronbach alpha of 0.85 (Siervo, Boschi, Papa, Bellini, & Falconi, 2005). The EAT-26 has also been validated in nonclinical populations with an accuracy rate of 90% (Mintz & O'Halloran, 2000).

The second pertinent data that was collected concerns the predictor variable, estimation of weight status. Five response options, “very underweight,” “slightly underweight,” “about the right weight,” “slightly overweight,” and “very overweight,” were used to assess perceived weight status. Several studies have measured weight perception with identical or similar response scales. Each answer choice was associated

to one of three categories. These categories included underestimation of weight status, accurate estimation of weight status, and overestimation of weight status. The response options labeled as “very underweight” and “slightly underweight” corresponded to the underestimation of weight status category. The response option labeled as “about the right weight” corresponded to the accurate estimation of weight status category. The final two response options, “slightly overweight” and “very overweight” corresponded to the overestimation of weight status category.

The connection between the perceived weight status response options to perceived weight status categories was based on a body mass index (BMI) value that fell between 18.5 and 24.9. This range denotes a normal or healthy weight. BMI values were calculated based on height and weight. For instance, a BMI value less than 18.5 indicates a weight that it is not normal. In other words, it is considered to fall within the underweight range. Thus, the link between perceived weight status and the weight status categories listed above would not apply to a BMI below 18.5. To further explain, the response choices, “very underweight” or “slightly underweight” would correspond to the accurate estimation of weight status category for a BMI identified as underweight. All of the other response choices would correspond to the overestimation of weight status category.

In order to calculate BMIs, measured heights and weights were used. Definitions on what constitutes as the normal BMI range vary. The classification system set forth by the Centers for Disease Control and Prevention (CDC) was followed. The CDC outlines four BMI cutoffs. As mentioned, a BMI value less than 18.5 fell within the underweight range. Also previously recognized, a BMI value between 18.5 and 24.9 fell within the

normal weight range. A BMI value of 25.0 to 29.9 fell within the overweight range. Any BMI value above 30.0 fell within the obese range. In order to compute the BMI for measured height and weight, the following formula was used:  $\text{weight [kg]} / \text{height [m]}^2$ .

Overestimation of weight status was defined as the response to the question assessing perceived weight status. Given that all participants were of normal weight, responses of either "slightly underweight" or "underweight" represented underestimation, responses of "about the right weight" represented accurate estimation, and responses of either "slightly overweight" or "very overweight" represented overestimation.

Disordered eating symptomatology was defined as the sum of the items on the EAT-26. Lower scores toward 0 represented lower levels of disordered eating symptomatology and higher scores toward 78 represented higher levels of disordered eating symptomatology.

#### Data Collection Procedures and Environment

Texas State's Institutional Review Board approved an application before beginning the study. Students enrolled in a psychology course were invited to participate in the study. Those who chose to participate were instructed to sign-up for a time and date to meet the researcher or the research assistant outside of class. Data for the study were collected in an unoccupied room in the main psychology building on campus. Upon arrival, written informed consent was obtained from each participant. Participants then completed the demographics form and the EAT-26. Following the completion of the two forms, the participant's height and weight were measured.

### Statistical Analyses

To address the first research question, a chi-square analysis was conducted to determine if there is a significant difference in the frequency of weight estimation categories (underestimation, accurate estimation, and overestimation) for these normal-weight participants. To address the second research question, an independent samples t-test was conducted; the single factor was the weight estimation category, and the dependent measure was the EAT-26 score. Additionally, exploratory analyses with the demographic variables of ethnicity and relationship status were conducted.

### Summary

Chapter III described the methods that were used to examine the relationship between disordered eating behaviors and perception of body weight. The chapter included a description of the research design, the research variables, population, instrumentation, data collection and data analysis procedures.



## **CHAPTER IV**

### **RESULTS**

Chapter IV will first provide a brief summary of the methodology used in the study. Following the short review, the results of the inferential analyses that were conducted to answer the research questions posed in the study will be outlined. Specifically, this includes the two research questions regarding whether there was a significant difference in the frequency of weight estimation categories and whether overestimation predicts symptoms of disordered eating.

#### **Method Summary**

In the study, participants were instructed to complete a demographic form and a questionnaire. Additionally, each participant's height and weight were measured. The demographic form included questions about age, gender, ethnicity, relationship status, current or past history of an eating disorder, and perception of body weight. The questionnaire used in the study was the EAT-26. The purpose of collecting responses regarding body weight perception was to assess estimation of weight status. Likewise, the use of the EAT-26 was to determine the presence of disordered eating symptomatology.

#### **Results**

The first inferential analysis conducted was a chi-square ( $\chi^2$ ) test. The test provided an answer to the first research question regarding whether there was a

significant difference in the frequency of weight estimation categories among the participants. The chi-square ( $\chi^2$ ) test concluded that there was a significant difference between the observed and expected results,  $\chi^2 = 24.74, p = .00$ . Thus, there was a significant difference in the frequency of weight estimation categories.

The next inferential analysis conducted was an independent samples t-test. The test provided an answer to the second research question concerning whether there was a significant difference between the estimation categories and symptoms of disordered eating. For this analysis, the Levene's test for equality of variances revealed that the accurate estimation group and the overestimation group have approximately equal variance on the dependent variable which was the EAT-26 score. Accordingly, equal variances were assumed. The results of the independent samples t -test indicated a statistically significant difference between accurate estimation ( $M = 29.7, SD = 14.4$ ) and overestimation ( $M = 50.2, SD = 18.2$ ) in the prediction of disordered eating symptomatology (see Table 1),  $t(38) = -3.735, p = .001$ .

Table 1

*Independent Samples T-Test for Body Weight Perception Predicting EAT-26 Score*

	Perception	<i>N</i>	<i>M</i>	<i>SD</i>
EAT-26 Score	Accurate Estimation	29	29.6897	14.42494
	Overestimation	11	50.1818	18.15940

\*  $p < .05$

The last two inferential analyses conducted were independent samples t-tests to provide answers to exploratory questions in regard to the demographic variables of relationship status and ethnicity. The demographic variable of relationship status was first explored. The two groups were “single” or “in a relationship.” The Levene's test for equality of variance showed that the two groups have approximately equal variance

on the EAT-26 score. Therefore, equal variances were assumed. The results revealed that there was not a significant difference between the two groups (see Table 2),  $t(41) = -.512, p = .611$ .

Table 2

*Independent Samples T-Test for Relationship Status Predicting EAT-26 Score*

	Relationship Status	<i>N</i>	<i>M</i>	<i>SD</i>
EAT-26 Score	Single	20	33.7000	16.91185
	In A Relationship	23	36.4348	17.91349

The demographic variable of ethnicity was then explored. The results of the independent samples t-test yielded a similar outcome to the relationship status variable. The two ethnicity groups selected for analysis were “Caucasian” and “Hispanic.” The Levene’s test for equality of variance showed that the two groups have approximately equal variance on the EAT-26 score. Once more, equal variances were assumed. There was not a significant difference between the two groups in the prediction of disordered eating symptomatology (see Table 3),  $t(31) = 1.505, p = .143$ .

Table 3

*Independent Samples T-Test for Ethnicity Predicting EAT-26 Score*

	Ethnicity	<i>N</i>	<i>M</i>	<i>SD</i>
EAT-26 Score	Caucasian	22	39.0909	15.58665
	Hispanic	11	30.4545	15.44904

### Summary

The original hypothesis regarding whether overestimation would predict symptoms of disordered eating behaviors was supported with the current sample of female university students. Thus, overestimation emerged as a statistically significant

predictor of disordered eating symptomatology. Exploratory analyses with demographic variables were also conducted. The relationship status variable and ethnicity variable were not found to be predictive of disordered eating symptomatology.

## **CHAPTER V**

### **DISCUSSION**

The main purpose of this study was to examine the relationship between disordered eating behaviors and body weight perception among college aged females within the normal weight range. Additionally, the demographic variables of relationship status and ethnicity were also explored. These objectives were achieved by examining scores on the EAT-26 and responses about body weight perception, relationship status, and ethnicity. The results of the study supported the original hypothesis. Analysis revealed that overestimation emerged as a significant predictor of disordered eating symptomatology. In Chapter V, the conclusions from the study, limitations of the study, and future directions for research will be discussed.

#### **Summary of Results**

The current study was guided by two hypotheses. The first hypothesis investigated whether there was a significant difference in the frequency of weight estimation categories among normal weight participants. Analysis related to the first hypothesis revealed there was a significant difference in the frequency of weight estimation categories. The second hypothesis examined whether overestimation predicted symptoms of disordered eating behaviors. Results indicated that overestimation was found to be a statistically significant predictor of disordered eating symptoms. Exploratory analyses with two of the demographic variables, relationship

status and ethnicity, were also investigated as predictors of disordered eating symptomatology. Neither one of the variables was found to be a significant predictor of disordered eating behaviors.

### Discussion of Results

In the current study, female students were recruited from Texas State University-San Marcos to participate in a study examining the relationship between body weight perception and symptoms of disordered eating. Data were collected from 81 participants. The sample was limited to only those participants with a BMI considered to fall within the normal weight range. Additionally, data were excluded from participants with a current or past history of an eating disorder. Thus, the final sample was reduced and included data from 43 participants. The rationale behind limiting the sample was two-fold. There is a paucity of research with an exclusive focus on normal weight females. Further, there is little research on the association between disordered eating behaviors and overestimation among normal weight, non-eating disordered populations.

According to the results of this study, overestimation was found to be a statistically significant predictor of disordered eating symptomatology. In other words, normal weight females who considered their weight to be overweight were found to have higher levels of disordered eating symptomatology. In comparison, participants who accurately perceived their weight status were found to have lower levels of disordered eating symptomatology. The findings of the study support the original hypothesis and extend previous research. Numerous studies have reported that normal weight individuals commonly diet and have desires to lose weight. Further, normal weight women frequently engage in unhealthy weight control behaviors, such as fasting or the

use of appetite suppressants. The results of the current study further confirm the belief that normal weight females often perceive themselves as overweight. Moreover, overestimation was positively associated with the severity of eating disorder symptoms. Therefore, these findings are consistent with other studies that have found that a great number of dieters are already within a healthy weight range.

Although the final sample only included women within the normal weight range, 25.6% perceived themselves as slightly overweight. This finding is in line with previous research. Previously mentioned, in a study conducted by Conley and Boardman (2007), 22.3% of normal weight females overestimated their weight status. Moreover, the NHANES reported that 33% of normal weight females included in the survey's sample considered themselves to be overweight. The current study is unique in that height and weight were directly measured. The aforementioned studies relied on self-reported height and weight to calculate BMI.

In order to calculate the BMI for each of the participants, the present study used an objective measure of height and weight. In an effort to increase accuracy and decrease potential errors, height and weight were directly measured. Conversely, a large amount of past research use subjective measures of height and weight. Several studies have examined the accuracy of self-reported height and weight. The findings of these studies will be discussed briefly and highlight the importance of obtaining objective height and weight data within eating disorder populations and non-clinical populations.

Meyer, Arcelus, and Wright (2009) investigated the accuracy of self-reported height and weight in a population of women with eating disorders. While the women were accurate in self-reporting their height, discrepancies between self-reported weight

and actual weight were observed. Patients with a diagnosis of anorexia nervosa or atypical anorexia nervosa significantly overestimated their weight. In contrast, women with a diagnosis of bulimia nervosa or atypical bulimia nervosa significantly underestimated their weight. Thus, the researchers proposed that there may be self-reporting biases associated with different diagnostic subgroups. These findings were comparable with the results of an earlier study conducted by McCabe et al. (2001). Both studies provide evidence that self-report data is unreliable.

In addition to populations with eating pathology, several studies have examined the accuracy of self-reported height and weight among non-clinical groups. Meyer et al. (2009) compared estimated and actual measurements of height and weight. The sample consisted of undergraduate and graduate female students. The women significantly underestimated their weight and overestimated their height. Once again, these findings emphasize that calculating BMI based on self-report data may not be accurate.

The findings from previous research outlined above demonstrate an important strength of the current study. For the reason that self-reported height and weight have been found to yield inaccurate BMI calculations in clinical and non clinical populations, it is critical to utilize objective measures. Subjective measurements of height and weight are commonly used because it is a fast and easy way to obtain information. However, relying on self-reported data introduces error. Clearly, direct measures of height and weight ensure the accuracy of BMI calculations. Thus, participants were undoubtedly placed in the correct weight group in the present study.

Few studies have explored the association between relationship status and symptoms of disordered eating. In the current study, participants were asked to indicate



their relationship status by choosing one of two response options. This variable was of interest during exploratory analyses. Past research has examined interpersonal factors in relation to eating, weight, and shape concerns. Recently, Morrison, Doss, and Perez (2009) sought to present additional research to a small body of studies with inconsistent findings. Specifically, the researchers investigated whether being involved in a romantic relationship influenced the aforesaid concerns. The *Eating Disorder Inventory-2* (EDI-2; Garner, 1991) was used to measure eating disorder behaviors and attitudes among the sample population. Participants completed the EDI-2 on two different occasions. The EDI-2 score decreased between the time points. The researchers speculated that the improvement in EDI-2 scores over time may be attributable to relationship satisfaction or to other factors.

In the current study, exploratory analysis was conducted to examine the association between relationship status and disordered eating symptomatology. More than half of the participants (53%) were in a relationship at the time of data collection. The results of the independent samples t-test showed that there were no significant differences between the two groups and their EAT-26 score. Thus, these results indicate that relationship status alone does not account for high levels of disordered eating symptomatology. The findings of the Morrison et al. (2009) study described above may offer an explanation. Like their study suggested, there are likely many factors which may influence eating behaviors and attitudes.

In addition to relationship status, exploratory analysis with the demographic variable of ethnicity was also conducted. Prior to the start of the study, the official website of the university was used to deduce information regarding the anticipated ethnic

backgrounds of the participants. According to the latest data, the university's racial and ethnic composition is approximately 62.3% Caucasian, 26.2% Hispanic, 5.8% African American, and 2% Asian American (Texas State University, 2010). In view of this data, it was anticipated that the racial and ethnic make up of the participants would reflect that of the student body. Hence, it was predicted that the majority of the sample would be Caucasian, followed by Hispanic, African American, and Asian American.

The findings in the current study were reflective of the student composition at Texas State University – San Marcos. Study participants were asked to indicate their ethnicity by choosing one of six response options. Caucasian and Hispanic ethnicities were most frequently reported among the sample population. Specifically, 51.2% identified themselves as Caucasian and 25.6% were Hispanic. Given that Texas State University – San Marcos is recognized as having a large undergraduate population of Hispanic students, an interesting opportunity to explore possible ethnic differences emerged. The results of the independent samples t-test revealed that there were no significant differences between the two groups and their EAT-26 score.

Ethnic differences in relation to disordered eating have not been adequately examined. Smolak and Stiegel-Moore (2001) stressed the need for further investigation in this area. In particular, very few studies are available regarding the Hispanic population (Rich & Thomas, 2008). The existing studies have reported rates of bulimia are similar or higher in Hispanics than among Caucasians (Cachelin, Veisel, Barzegarnazari, & Striegel-Moore, 2000; Chamorro & Flores-Ortiz, 2000; Lester & Petrie, 1998). Cachelin et al. (2000) revealed that 29% of the Hispanic females included in the study's sample population suffered from bulimia nervosa. In comparison, 12% of

Caucasian women suffered from bulimia nervosa. Moreover, in a study carried out by Wildes and Emery (2001), adult Hispanic females were found to be equally likely as Caucasians to engage in disordered eating behaviors.

In recent years, Rich and Thomas (2008) sought to investigate ethnic differences related to disordered eating behavior among college students. Similar to the present study, the researchers used the EAT-26 to measure eating behavior and attitudes. The sample included African American, Caucasian, and Hispanic students. The results of the study showed that there were no ethnic differences in disordered eating. Due to these findings, the researchers emphasized the importance of further examining the role of ethnicity in women's eating behaviors and attitudes. Rich and Thomas (2008) suggest that one possible reason for the lack of significant findings could be attributable to cultural changes within the African American and Hispanic populations. Therefore, their study challenges conventional assumptions that disordered eating is a problem faced only by Caucasian females.

The previous mentioned findings suggest that disordered eating is not exclusive to a single ethnicity group. Despite this, ethnicity is very seldom addressed. Exploratory analysis in the current study was an attempt to contribute to the lack of research regarding Hispanic females. Disordered eating is typically thought of a problem that affects Caucasian women, by and large. However, the findings of the present study propose a recent novel view on the subject. The lack of significant differences between the two groups implies that Hispanic females engage in disordered eating behaviors in a similar fashion to Caucasian women. This finding calls for additional research which will be later discussed in the implications for further research section.

### Summary Statement

The research in this study adds to the current literature on non-eating disordered females. While many studies exist in this area, few have examined the relationship between body weight perceptions and disordered eating behaviors among normal weight women. The finding that normal weight females perceive themselves as overweight is expected given the past research. Thus, this theory appears to be remaining constant. The methodology used in this research increases the validity of the study. Generally, studies rely on self-reported height and weight to calculate BMI. However, height and weight was directly measured in the current study. Overestimation was found to be a statistically significant predictor of disordered eating symptoms. This finding provides support that addressing misperceptions of body weight may be an important tool for identifying those at risk for an eating disorder.

### Implications for Further Research

Given the results of the study, normal weight females commonly misperceive their weight status. Numerous studies have recognized this phenomenon. Overestimation is an area of concern because it is associated with eating disorders such as anorexia nervosa and bulimia nervosa. Future research should attempt to identify characteristics of women who overestimate. The past literature has identified individuals with higher education levels, higher income levels, and Caucasians as over estimators (Kuchler & Variyam, 2003). Given that the sample population in the current study included college students, the participants are clearly within the higher education category. The current study did not assess socioeconomic status. While not a focus of

this study, ethnic differences and overestimation could be potential area for future investigation.

Ethnicity was measured during exploratory analysis and may challenge previous notions that disordered eating is an issue predominately experienced by Caucasian women. The research in this study suggests that the gap between ethnicity groups may be closing. This should be examined in future studies. While the results in this study indicate that Hispanic and Caucasians endorsed similar levels of disordered eating, future research should attempt to replicate this finding in larger samples. Further, there is very little research regarding ethnic differences, particularly among Hispanic students. In addition, the results produced to date are inconsistent. Therefore, future research could add an important perspective.

Past researchers have called for further research to determine whether body weight perceptions are linked to disordered eating behaviors (Gucciardi et al., 2007). The present study confirmed that overestimation is significantly associated with symptoms of disordered eating. Further, the results indicate that many normal weight females may engage in unhealthy weight management strategies because they perceive themselves as overweight. This could reflect the western culture emphasis that slimness is highly desirable in women. Since the research in this area is sparse, future studies should examine other age groups.

#### Implications for Practice and Recommendations

Due to the findings of this study, emphasis should be placed on encouraging healthy weight management strategies in the college environment. For instance, increasing knowledge about healthy foods and the importance of engaging in physical

activity are possible ways to help students learn appropriate ways to maintain a healthy weight. Additionally, this could help females achieve an appropriate perception of their body weight.

Despite the small sample size in the current study, there was a high prevalence of disordered eating behaviors among the participants. This highlights the need for health professionals to recognize disordered eating as a major problem facing young females of today. Additionally, disordered eating may be experienced by females of all ethnic groups. Professionals need to be made aware of this emerging fact. Efforts should be made to research appropriate screening questions in order to help identify those at risk for developing an eating disorder. Thus, health professionals could then provide resources for individuals reporting these behaviors.

#### Limitations

Several limitations should be noted. In order to place participants in the appropriate weight range, BMI were calculated. BMI classifications vary across nations. Therefore, caution is recommended when comparing the results of this study. Moreover, BMI has been criticized because it does not take into account muscle mass and body fat weight. For this reason, there is a slight possibility that some participants may have been classified as overweight due to muscle that should have been considered as normal weight. However, this is more often a problem in males than females. The likelihood that this occurred in the current study is small.

Additionally, the design of the study was non-experimental. Moreover, convenience sampling was used. Thus, generalizability is limited. Furthermore, the sample size was small. This was anticipated prior to the start of the study given the

exclusionary criteria. For the reason that this study examined normal weight females only, data was excluded from numerous participants who were either classified as underweight or overweight.

These limitations are offset by several strengths. The majority of existing studies rely on self-reported height and weight. The present study used an objective measurement in order to ensure the validity of the study's results. Despite the small sample size, significant differences were revealed which likely reflects strong effects. Further, although not a focus of the current study, the university that was used to recruit participants has a large population of Hispanic students. This is not typical in other parts of the nation. Consequently, this allowed an interesting opportunity for exploratory analysis that would likely be more difficult at other universities. The data in the current study show that studies with the objective of examining ethnic differences need to use large samples in order to be test hypotheses with adequate power.

#### Summary and Conclusion

Despite the limitations in the study, the findings shed light on the relationship between body weight perceptions and disordered eating behaviors. Overestimation is associated with greater severity of disordered eating symptomatology. This finding reveals that emphasis should be placed on helping young females achieve appropriate perceptions of their body weight. This is especially true for normal weight individuals who perceive themselves as overweight when in reality, they are relatively thin. Misperceptions can lead to potentially dangerous behaviors, such as an eating disorder. Thus, this study highlights the importance of body weight perception and the need to correct inaccurate perceptions.

## APPENDIX A

### *Research Survey*

#### **Demographic Questionnaire**

For the following items, please fill in the blank or check the appropriate response.

1. What is your age? \_\_\_\_\_
2. What is your gender?
  - Female
  - Male
3. What is your ethnicity?
  - Asian American
  - Black or African American
  - Caucasian or White
  - Hispanic or Latino
  - Native American
  - Other: \_\_\_\_\_
4. What is your relationship status?
  - Single
  - In a relationship
5. Do you have a current or past history of an eating disorder?



No

Yes

6. How do you perceive your weight?

Very underweight

Slightly underweight

About the right weight

Slightly overweight

Very overweight

## APPENDIX B

### *Eating Attitudes Test (EAT-26) Questionnaire*

For each statement, circle the response indicating how often you feel the way that is indicated.

1. Am terrified about being overweight	Always	Usually	Often	Sometimes	Rarely	Never
2. Avoid eating when I am hungry	Always	Usually	Often	Sometimes	Rarely	Never
3. Find myself preoccupied with food	Always	Usually	Often	Sometimes	Rarely	Never
4. Have gone on eating binges where I feel I may not be able to stop	Always	Usually	Often	Sometimes	Rarely	Never
5. Cut my food into small pieces	Always	Usually	Often	Sometimes	Rarely	Never
6. Aware of the calorie content of foods I eat	Always	Usually	Often	Sometimes	Rarely	Never
7. Avoid food with high a carbohydrate content (bread, rice, potatoes, etc.)	Always	Usually	Often	Sometimes	Rarely	Never
8. Feel that others would prefer if I ate more	Always	Usually	Often	Sometimes	Rarely	Never
9. Vomit after I have eaten	Always	Usually	Often	Sometimes	Rarely	Never
10. Feel extremely guilty after eating	Always	Usually	Often	Sometimes	Rarely	Never
11. Am preoccupied with a desire to be thinner	Always	Usually	Often	Sometimes	Rarely	Never
12. Think about burning up calories when I exercise	Always	Usually	Often	Sometimes	Rarely	Never
13. Other people think I'm too thin	Always	Usually	Often	Sometimes	Rarely	Never
14. Am preoccupied with the thought of having fat on my body	Always	Usually	Often	Sometimes	Rarely	Never
15. Take longer than others to eat my meals	Always	Usually	Often	Sometimes	Rarely	Never
16. Avoid foods with sugar	Always	Usually	Often	Sometimes	Rarely	Never
17. Eat diet foods	Always	Usually	Often	Sometimes	Rarely	Never
18. Feel that food controls my life	Always	Usually	Often	Sometimes	Rarely	Never
19. Display self-control around food	Always	Usually	Often	Sometimes	Rarely	Never
20. Feel that others pressure me to eat	Always	Usually	Often	Sometimes	Rarely	Never
21. Give too much time and thought to food	Always	Usually	Often	Sometimes	Rarely	Never

22. Feel uncomfortable after eating sweets	Always	Usually	Often	Sometimes	Rarely	Never
23. Engage in dieting behavior	Always	Usually	Often	Sometimes	Rarely	Never
24. Like my stomach to be empty	Always	Usually	Often	Sometimes	Rarely	Never
25. Have the impulse to vomit after meals	Always	Usually	Often	Sometimes	Rarely	Never
26. Enjoy trying new rich foods	Always	Usually	Often	Sometimes	Rarely	Never

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## **VITA**

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