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THE EFFECT OF MARITAL STATUS AND HAVING BIOLOGICAL CHILDREN ON THE  
WEIGHT PERCEPTIONS OF NORMAL WEIGHT WOMEN

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## **Abstract**

*Objective:* The purpose of this study was to determine the effect, if any, that marital status and having biological children have on the weight perceptions of normal weight women. *Data and Methods:* The data for this study were taken from the 2007-2008 NHANES data-set. Out of the original 10,149 participants, only females, who were not pregnant at the time of the study who had a BMI between 18.0-24.5 and who were 20-44 years old were included. These restrictions resulted in a final sample of 314 participants. Questions used to analyze this data included marital status, live births and weight perception. Other variables were also controlled such as race, education level and general health status. *Results:* In order to establish a general relationship between the dependent and independent variables, two cross tabulations were done. Then, in order to determine statistical significance a logistical regression analysis was run. Weight Perception was compared with both marital status and a variable reporting whether the participant had a child or not. Only the variable concerning live births was found to be statistically significant. Normal weight women who have given birth are more likely to view themselves as overweight than normal weight women who have never given birth. Additionally, certain control variables that were added to the list of variables utilized in the logistic regression were statistically significant: white women are more likely to perceive themselves as overweight than Hispanic women, as BMI increases the chance of women viewing themselves as overweight increases and the more depressed a woman is, the higher the likelihood is for viewing herself as overweight. *Discussion:* One of the two hypotheses was confirmed: normal weight women who have given birth have a more inaccurate weight perception than normal

weight women who haven't had a baby. Also, those who are white, who have a BMI closer to 24.9 and those who are depressed more often also tend to have inaccurate weight perceptions.

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## Chapter 1: Introduction

### **Background**

Weight perception has been a major topic in our culture for years. More specifically, an overestimation of body weight has become the norm among the normal weight women of the United States (e.g., Chang and Christakis, 2001, Ver Ploeg, *et al*, in 2008), and has more recently begun to appear all over the world as well, in areas such as Europe and Asia (Wardle, *et al*, 2005). The trend toward greater numbers of women of normal weight who perceive themselves as being overweight has been found to be related to the new standard of thinness that has been promoted by the media (Steenhuis, *et al*,. 2006). It has also been found that women all over the world, generally those who are educated, and who are of a normal weight are more likely to consider themselves heavier than they actually are. They also express a desire to lose weight, even though it may not be necessary (Wardle, *et al*,2006). Even some women who are underweight consider themselves to be “fat”, even when an eating disorder is not present. (Kjærbye-Thygesen, *et al*, 2004).

Due to the recent epidemic of obesity, the topic of weight and weight perception has become widely studied. However, most research of this topic has been done on overweight individuals in order to understand our growing waistlines. Studies of weight perceptions of normal weight women are out there, but they are not as common. Considering the increasing tendency for women to perceive themselves as overweight, it would be advantageous to research this topic more. It is a major nutritional issue due to the increase in unhealthy diets women attempt in order to lose weight, even during such a vital period as pregnancy. There is also a psychological component to it as well,

since weight perception is influenced by how we view ourselves globally (Cash and Hicks 1990).

The few studies that focus on normal weight women and weight perception have found two important factors. It had been found that that white women and women who have a higher level of education have an increased tendency to view themselves as overweight. One study done by Wardle, *et al.* 2005 assessed the prevalence of educated persons all over the world who believe they are overweight. Results showed that normal weight women with a higher education have the greatest tendency to consider themselves overweight when compared to women of other ethnicities and women with a lower level of education. Another study by Peratakul, *et al.*, in 2002 looked at the differences in perception of being overweight across different ethnicities. It was found that white women more commonly perceived themselves as overweight than African-American and Hispanic women.

Although these two factors are enlightening, we need more information in order to get the full picture of the reasoning behind the self perception of being overweight in normal weight women. Therefore in order to increase our understanding of this issue, I have chosen to look at the effects of marital status and the presence of children on the weight perception of normal weight women.

Little is known about these two topics. When considering marital status we know more about weight status and well-being rather than weight perceptions. So far it has been found that thinness in women is valued in our society which leads to a higher pressure on single women to be thin (Sobal, *et al.*, 1995). Married people have a tendency to gain more weight than their unmarried counterparts (Sobal, *et al.*, 1992).

And women who are recently divorced have a tendency to lose more weight than most other women (Meltzer & Everhardt, 1995). However, when one considers the presence of children, well-being appears to be considered more important than weight changes in current research. As a result, I expect that these two important social statuses in a woman's life have a considerable impact on weight perception because we know that they affect women's well-being and well-being is associated with weight perceptions (Cash and Hicks, 1990).

Therefore, in order to fully understand my study, one must first look at the general effect of well-being on weight perception. Most studies on this topic deal with adolescents and focus more on body image rather than weight perception. Few papers have been written on this topic that address older women. One study, conducted by Cash and Hicks in 1990, however, focused on college aged and older men and women to determine whether factors such as well-being had an effect on weight perception. This study consisted of two different surveys that were administered: one which asked about actual weight and perceived weight of participants and the second compared those who perceived themselves as overweight with those who were actually overweight. The purpose of these questionnaires was to determine whether there were psychological differences among the study participants. Overall it was found that those who perceived themselves as overweight, but were not, tended to have lower self esteem; thus showing that those with high self esteem and therefore have a better sense of well-being and a more accurate weight perception (Cash and Hicks, 1990).

Once one understands the general effect of well-being on weight perception, it is easier to understand the role of marital status and childbearing. Marital status is a huge

factor that could influence weight perception because well-being tends to be altered when marital status changes and, as discussed above, well-being influences weight perceptions. Single women tend to be more insecure with their weight due to the importance males put on their partner's size (Sobal, *et al.*, 1995). When a woman gets married, her sense of well being improves (Gove, *et al.*, 1983) which may result in a more accurate weight perception. And, when a woman is divorced, she is generally put under stressful conditions which may result in less accurate weight perceptions (Sobal, *et al.*, 2003) As a result of the lifestyle and mental health changes that accompany the variations of marital status, these changes have the ability to alter weight perception.

Additionally, although the relationship between weight perception and the presence of children is not widely studied, there is a great deal of research on the effect of the presence of children on general well-being. In fact, it has been found that childless women appear to fare better than women with children in the area of mental health, especially in their tendency to show lower rates of depression (Pudrovskaya, *et al.*, 2010). Therefore it can be hypothesized that women with children have a decreased sense of well being and therefore have a more inaccurate weight perception compared to women without children. Additionally, normal weight women who give birth may have a higher tendency to have inaccurate weight perceptions compared to those who adopt. Due to the physiological changes that occur during pregnancy, temporary or not, normal weight women who have given birth may be influenced by how they saw their body during and after pregnancy. This may lead these women to maintain an inaccurate weight perception later on.

Next, I will review what is actually known about the associations between actual



weight, weight perceptions and marital status as well as what has been discovered about the associations between actual weight, weight perceptions and childbearing / childrearing. Considering there are no current studies that piece all of this information together, I find it important to review the connections I have found.

## **Literature Review**

In order to determine weight perception, a woman's actual weight must be compared to how much they think they weigh. Collecting accurate data is thus necessary in order to determine a participant's weight perception. Many studies measured participants BMI (body mass index) and proceeded to administer a survey in order to determine the participants' own perception of their BMI and their actual weight status. In a 2008 study by Gregory, *et al*, researchers worked with the CDC (Center for Disease Control) and administered over 10,000 surveys to a wide range of adult participants living in the United States. They asked participants to report their height and weight (from which a BMI was calculated) along with their own perceived weight status. In order to enable participants to easily label their perceived weight, BMI was separated into three categories and each category was given a basic description: BMI 18.5–24.9 kg/m<sup>2</sup> was *about right*, BMI 25–29.9 kg/m<sup>2</sup> was *slightly overweight*, and BMI  $\geq$ 30.0 kg/m<sup>2</sup> was *very overweight*. The calculated BMI values were also separated into the same three categories to insure consistency. As expected, a very low percentage of women predicted their weight as “about right”, and most normal weight women predicted themselves as being heavier than they actually were. Conversely, obese women had a tendency to see themselves as slightly overweight or about right as opposed to very overweight and therefore considered themselves lighter than they

actually were. (Gregory, *et al.*, 2008).

Similarly, another study conducted by Steenhuis, *et al.*, in 2008, analyzed how people arrive at their weight perceptions. This study also administered a survey requesting self-reported weight and height from participants from which a BMI was computed. Questions were also asked in order to determine the participants' weight perception. However, this study also requested that these people list what methods they used to determine how they viewed their body, such as listening to others opinions or comparing their bodies to others, giving this study another dimension. Participants noted that the methods that were used most often were using the scale, the mirror and their physical condition as well as monitoring whether their clothes felt loose or tight as ways to determine whether or not they were overweight. It was found that women who were accurate in assessing their body weight, whether they were underweight, normal, or overweight, used comparison methods less frequently than those that over/underestimated their weight. Females who were of a healthy weight and thought they were overweight tended to listen to what others said about them. Those who were overweight but thought they were normal or underweight did not listen as much to others' opinions. Additionally, a great number of normal weight women who correctly perceived their weight claimed they have never or rarely used dieting in order to lose weight. In other words, those who know how much they weigh are not highly influenced by those around them; however, outside sources are capable of causing internal conflicts about one's weight. (Steenhuis *et al.*, 2006).

Although weight perception is widely studied in current times, certain aspects are overlooked and therefore must be examined. Marital status and its effect on weight

perception is one of those factors, as stated in one of the few studies done about this topic by Markey and Markey in 2010. This study found that the size of a marital partner affects weight perception, as do the ideals of the partner, especially for normal weight women. However, even they did not focus on the effect of the status of being single versus married on an individual's weight perception. Instead they focused on the effect of the weight of a significant other on the participant's weight perception. In order to gain a clearer understanding of the topic, it is necessary to review statistics about different aspects of marital status.

A cross sectional study by Sobal *et al* in 1995 was conducted and found that although men are not as concerned about their weight as women, they are much more likely to emphasize the importance of thinness in a partner. They even displayed a certain level of discomfort when engaging in dating activities with an overweight partner. Thus, it comes to no surprise that the study discovered that women are far more concerned about personal thinness than men. (Sobal, *et al.*,1995). Another study, conducted by Jeffery *et al*, in 1995 found even more confirming evidence that leads to a better understanding of the troubles women have with developing an accurate weight perception. The study analyzed the relationship between BMI and social status, and it was discovered that women of an average weight were more likely to be married. Women who were either overweight or underweight had a lower likelihood of marrying. Additionally, as found in the study cited by Markey and Markey, it is not solely the amount a woman actually weighs that influences her weight concerns and skewed weight perception. If a woman is heavier than her partner she tends to be even more concerned about her weight, and therefore puts more pressure on herself to be thin.

Consequently, it has been found that women experience more pressure to be thin in order to increase their chances of finding a partner. However, does this current value of thinness retain such significance after a residential partnership is established? Although studies on marital status and weight perception are scarce, a number of researchers have looked at the relationship between marital status and actual weight status, such as Sobal, *et al* in 1992. There have been some interesting results. This study was conducted by the National Survey of Personal Health Practices and Consequences to analyze the relationship between obesity and marital status. It consisted of analyzing already calculated data with a follow-up phone call to the participants of this study. It was found that although married women tend to be healthier from a mental standpoint, certain lifestyle changes such as eating and exercise habits that accompany starting a life with a new partner lead to larger weight gain overall. Both married and previously married women were heavier and had an increased chance of becoming obese than were women who had never married. (Sobal, *et al.*, 1992).

Another study, conducted by Sotoudeh, *et al* in 2008, looked at a different aspect of marital status by analyzing weight changes over time in women. These researchers focused not only on single women, but both married men and women going through all types of marital transitions, whether it be divorce, getting re-married, newly married or being married for a long time. This was a longitudinal study that was conducted using self-reported weights and marital status of participants initially. Then, 10 years later, the same participants were contacted and given the same questionnaire to determine whether and/or in what ways their marital status and weight had changed over time. Changes in weight and marital status were then evaluated. It was found that married

women gained more weight than single women, and single women lost more weight than married women did, especially if they were newly single after experiencing divorce or the death of their spouse. Researchers predicted that, despite weight gain, married women will become comfortable with themselves. They will also develop a more lethargic lifestyle which may be a result of their spouse's eating and lifestyle habits. On the other hand, researchers predicted divorce will lead to weight loss as women going through such a separation are under a great deal of stress, or may feel pressure to find another mate. Although the study does not focus on weight perception, it does analyze weight changes over time when compared to one's marital situation. This information will aid in our ability to understand different weight perceptions of varied marital statuses with further research (Sotoudeh, *et al.*, 2008).

A number of other studies have analyzed similar topics, and most results are consistent with those found by Sotoudeh, *et al* in 2008. For example, a longitudinal analysis by Sobal, *et al* in 2003 analyzed a number of studies in the introduction and additionally conducted an analysis with NHANES (National Health and Nutrition Examination Survey) data and a follow up analysis with NHEFS (The NHANES Epidemiological Follow-Up Study) data 10 years later. The surveys were compared for individual differences in weight and whether marital status had changed in that period of time. It was found that single women who got married during this 10 year time period gained more weight than the women who were married at the commencement of the study. Additionally, normal weight women who remained single over the 10 year period lost more weight than other women who had been married at the start of the study, whether they remained married or not. (Sobal, *et al.*, 2003). These results were

consistent with those of another study, done by Umberson in 1992, that reviewed changes in weight and healthy behaviors in comparison with marital status changes. They too found that the transition from unmarried to married leads to weight gain due to a decrease in healthy behaviors. This study also found that normal weight women who went from married to unmarried experienced little to no change in healthy behaviors and weight status. These differing results suggest that more research must be conducted on this particular topic (Umberson, 1992).

Even though there is a plethora of studies focusing on weight changes in comparison to marital status, very few have been conducted to find a relationship between weight perception and marital status. One study conducted in India by Sotoudeh, *et al* in 2008, focused only on married women. It was developed to determine whether a woman's assumption of her husband's opinion and satisfaction with her body affected how she felt about herself. Women were given a questionnaire which asked a number of questions, including an inquiry of the participant's actual weight, their weight perception/body image and marital status. Married women were then questioned further. They were asked to speculate what their husband's opinion of their body was, and to state whether they believe their husband was satisfied with their wife's body or not. After this, these women were asked to report their body satisfaction again. Both reports, the prediction of the husband's opinion and their own report, were compared to the weight given at the beginning of the study. It was found that most women who were overweight but thought their husband felt they were "just right" would predict a weight lower than their actual weight, and therefore view themselves as thinner than they actually were. In addition, it was also found that overweight women thought their

husbands would perceive them as normal or underweight. Normal and underweight women thought their husbands would perceive them as overweight. Although this study was not conducted in the United States, and there are cultural differences present between these two countries, the results are still interesting and could be beneficial overall. This demonstrates that at least in India, married women's perceptions of their weight are significantly influenced by the mere prediction of their husbands' opinions, whether they are underweight/normal or overweight (Sotoudeh, *et al.*, 2008).

Another key dimension to female's lives is whether they have become a mother, as this comes with both physiological and mental impacts on a woman's weight perception. Initially, one may regard pregnancy as a major factor. It is a fact that women gain weight during pregnancy and it is a time when a woman's body changes drastically. The overall recommendation of weight gain during gestation is determined by the woman's starting weight; therefore an increase in fat deposition in the body is inevitable. Additionally, it is now more common for women to have children later in life than it was in the past. It has been hypothesized that older pregnant women have a tendency to gain more weight over time, even after pregnancy (Williamson, *et al.*, 1994). One study conducted by Williamson, *et al* in 1994, analyzed this hypothesis in attempt to find a clear answer. In this project, researchers looked at the weights of over 2,000 women in the first NHANES study and then weighed them 10 years later. It was found that women who never had children gained less weight overall than those who had a child in the intervening 10 year period. Also, those who had children during the 10 year period gained the same amount of weight as those who had children prior to those 10 years. Those who were over 25 when they had their first child especially gained more

weight. Therefore the older a female is, the higher the chance she has of gaining more weight both during and after pregnancy (Williamson, *et al.*, 1994).

Overall, although the effect of childbearing and weight perception has not been thoroughly analyzed, it has been made clear that childbearing causes weight gain. This has been found by Williamson, *et al* and many others. Yet, this weight gain may only be temporary. In a literature review done by Debra Tooke Crowell in 2000, it stated that women who gained an average amount of weight during their pregnancy will become only 2.2 pounds heavier than their pre-pregnancy weight within the months after giving birth. This is only 1.2 pounds above the average of a 1 pound yearly weight gain for individuals in the US. This statistic was found to be especially significant with normal weight woman as they retained about 2.2-4.6 pounds above their pre-pregnancy weight. This proves that for many women, pregnancy is not always a major factor affecting actual weight and weight perception because, for many, they are only slightly heavier than they were prior to having children.

Additionally, some women adopt their children or become step parents instead of giving birth to their own child. Since these women do not undergo the physiological changes a pregnant woman does, one must look at alternative factors to consider how the presence of these children affects the woman's weight perception. One study done by Golombok, *et al*, in 2010, chose to look at the psychological well-being of a variety of women who became mothers in a number of ways. This longitudinal study surveyed mothers who underwent artificial insemination, oocyte donation, surrogacy, adopted or chose natural conception and compared the well-being of these parents. It was found that mothers who chose to adopt or had a surrogate maintained a closer relationship to



their child. They were happier with this significant life changing event than the women who went through pregnancy. It was also found that adoption or surrogacy was not attributable to any sort of negative psychological well-being in the families; in fact it may have actually increased the well-being of the mothers. (Golombok, *et al.*, 2006). From this data, it can be hypothesized that mothers who did not give birth to their children may have a more accurate weight perception than those women who went through pregnancy. This may be due to their increased well-being and therefore increased happiness from having a child when they first thought that they may not be able to. However, additional research must be done in order to make any accurate claims.

Although there may be a slight difference in weight perception in women who naturally gave birth to their child and those that used other methods such as adoption, one factor is consistent: women are having fewer children than they did in the past. Part of this trend is due to the rise in the importance of socioeconomic status for well-being (Umberson, *et al.*, 2010). Since our society has become based more on business rather than on agriculture, the advantage of having a large family has diminished. Instead, children are now becoming an economic stressor on parents as they struggle to provide, because raising children is very costly. This can be a deterrent to having children (McLanahan and Adams, 1987). Another aspect leading to the decrease in the number of children a woman has is because women now have a choice; they no longer feel obligated to have children and tend to a family. Now, many women work outside the home and a family does not always seem necessary (Umberson, *et al.*, 2010). Therefore, it is possible that some women may regard children as a burden, but they may also be pressured by their families to have children. This dissonance could lead to

a negative impact on the woman's sense of well-being, resulting in a more inaccurate weight perception.

In addition to the factors that are contributing to a decrease in child-bearing women, some studies have discovered negative outcomes related to motherhood. In an annual review done by McLanahan and Adams in 1987, it was stated that parents are less happy overall than couples who have never had children, and single mothers are even less happy. It was also observed that marital satisfaction decreases with the introduction of the first child and continues until the child becomes an adolescent and moves out. In fact, it was stated that couples whose children have grown and moved out appear to be just as happy as couples who have never had children. Therefore, it appears that having a child only decreases well-being and marital satisfaction temporarily. With this information, one can also hypothesize that although having children may lead to a more inaccurate weight perception due to a decrease in a woman's sense of well-being, this effect may only be temporary. In order to confirm or deny this hypothesis, future longitudinal research must be done that records weight perceptions of women before child bearing, when their children are young and when their children have grown up.

## **Hypotheses**

Researchers have found significant correlations between marital status and a sense of well-being; correlations between the presence of biological children and a sense of well-being; and correlations between weight status and weight perception. They have not been studied as intertwining factors however, and it is important to examine them in greater depth and analyze other aspects of the issue. In order to

further the research on weight perception, this study will analyze a connection between weight perception of normal weight women and marital status and relationships between weight perception of normal weight woman and whether these normal weight women have given birth to a child . Therefore, this study will look at the effects that marital status and presence/absence of biological children individually have on the weight perception of normal weight women.

Overall, it is expected that all normal weight women without children will have a more accurate weight perception than normal weight women with children. This prediction was made because other studies have shown that children actually decrease the psychological well-being of the parents, and those with a decreased well-being are more likely to see themselves as overweight. Additionally, it is expected that normal weight, married women will have a more accurate weight perception than normal weight, single women. This is expected because marriage has been shown to increase the sense of well-being of individuals, and increases the likelihood of a more accurate weight perception.

## **Chapter 2: Data and Methods**

### **Data**

This study is an epidemiological study utilizing the 2007-2008 National Health and Nutrition Examination Survey (NHANES) administered by the National Center for Health Statistics (NCHS) which is a part of the Center for Disease Control (CDC). This survey began in the 1960s and, since 1999 it has been administered in a continuous form in order to analyze emerging health needs of the population. The goal of NHANES is to assess the health and nutrition of children and adults in the United States. Data is collected by administering physical examinations in combination with personal interviews to a nationally represented sample of about 5,000 people from across the country. The interview asks various questions about demographics, socioeconomic status, along with dietary and health-related questions. The physical examination includes medical, dental, and physiological measurements, along with laboratory tests that are administered by qualified and properly trained medical personnel. The data collected is used to determine the prevalence of and risks associated with major diseases along with assessing nutritional status and its relationship to health promotion and disease prevention.

The NHANES data are also meant to be utilized in epidemiological studies, such as this one. The 2007-2008 NHANES continuous study collects measures on key variables I am looking at, and hence is an asset to my research.

### **Measures**

The 2007-2008 NHANES data was acquired by downloading the data set as a whole. I then recoded certain variables by giving each variable a new name and

combining certain values within each variable as needed. Recoding the values of certain variables enabled me to focus more on my research question. Then, all the variables that were not needed for this study were dropped. The variables used in this study include: gender, age, race, education level, marital status, BMI, pregnancy status, whether one has had a child or not, and several questions used as a depression screener.

### Sample Criteria

For my study I restricted my sample by gender, age, BMI and current pregnancy status to accommodate the research question. Only the females were kept, as this study is solely about females. Then, it was necessary to eliminate all females that could possibly be pregnant during the time of the survey, as this could affect their body image and weight. The pregnancy data was only available for women 20-44 years of age; therefore only women in that age range were kept. Additionally, as stated in the introduction, this study is focusing on normal weight women and therefore only data corresponding to women with what is known as a normal BMI (in this study between 18.0 and 24.9 kg/m<sup>2</sup>) were kept. After these restrictions were made, a missing value analysis was conducted and only those women who had complete data on all of the study variables were included in the final analysis. The final sample size for this study is 314.

### Weight Perceptions

Weight perception is the dependent variable for this study. In order to determine weight perceptions, one particular variable was kept that asked participants to report whether they thought they were overweight, underweight or “just right”; the variable,

whq030, was re-coded as wtperc. Next, a new weight perception variable was created. Those who perceived themselves as underweight were combined with those who regard themselves as “just right” because this study is only focusing on those who perceive themselves to be overweight. This newly combined variable was coded as wtperc\_ow. This alone answers the weight perception part of the research question as it is directly asking participants to report how they view their weight.

### Marital Status

For this study, the variable for marital status was broken into three separate categories: (1) Married/living with a partner (as I find the legal status of marriage irrelevant to this study), (2) never married and (3) widowed, divorced or separated. This study is only concerned with women who were never married or those with a significant other; I am not looking at those who are widowed, divorced or separated specifically, although these women remain in the data set. Women who are widowed, divorced or separated have been retained to 1) be used in the final analysis for those who are interested in the outcome of weight perception for this group of women and 2) to enable a cleaner analysis of those in a union and those who have never been married.

### Motherhood/Parent Status

In this study, motherhood is measured solely by whether the participant has had a live birth or not. Given data limitations in NHANES, I cannot identify women who adopted, have step children or utilized a surrogate. Therefore they are coded as not being a mother. To create this variable and considering the skip patterns in the reproductive health questionnaire, four variables were kept: rhq010, which inquired about the age of the participant’s first menstrual period, rhq030, which asked if the

participant had ever been pregnant, rhq131, which asked if they had ever given birth and rhq171, which asked those who had been pregnant how many children they had.

### Controls

A few additional variables were kept to be utilized in a multivariate analysis for the purpose of conducting a more adequate test of my hypothesis. The first variable kept for the analysis was BMI. Additionally, all races were included, as different races have different perceptions of themselves. I also kept education because it has been shown that those with different educational levels also have varying weight perceptions. In addition well-being variables from the depression and general health screeners were also utilized as control variables.

The race variable was re-coded and renamed as race. Those who were of Latino descent were combined into one variable because the two different Latino descents separately had no impact on my study. It was more convenient to combine the two to further simplify the variable. White, African American and “other” categories were left unchanged.

Education level was re-coded asedulvl. All participants without a high school diploma (no school through 12<sup>th</sup> grade) were combined into one category and those with a high school diploma or GED were combined into a second category. Those that had some college education were placed in a third category and those who are college graduates were placed in the last category. Having a separate category for each year of completed education was not necessary for this control variable. Rather, it was only essential to acquire a general idea of the education levels of the participants

To measure well being, I re-coded dpq020, which asked about one’s overall

frequency of depression, as negmood . I also re-coded dpq060, which asked the participant how frequently they felt bad about themselves, as negse. For negmood and negse, answers were combined to create two categories. This was in order to simplify analysis and contrast women who either did not have negative feelings or only had them for a few days versus women who had these feelings more than half the days or nearly every day.

## **Results**

Initially, to further understand the data set, I determined the frequencies for all the variables utilized in the final analysis, as seen in Table 1. When considering the independent and dependent variables after the sampling weights were accounted for, it was found that, in the sample a majority of normal weight women (76%) considered themselves the right weight, whereas only 20% of normal weight women thought they were overweight. Additionally, a majority of normal weight women (62%) were married and only 9% of normal weight women were never married. And finally, 61% of normal weight women had a child leaving 39% of normal weight women who had never given birth.



Table 1 - Descriptive statistics

|                              | <b>Unweighted Frequency</b> | <b>Unweighted %</b> | <b>Weighted %</b> |
|------------------------------|-----------------------------|---------------------|-------------------|
| <b>Weight Perceptions</b>    |                             |                     |                   |
| Underweight                  | 58                          | 7%                  | 4%                |
| About Right                  | 234                         | 74%                 | 76%               |
| Overweight                   | 58                          | 18%                 | 20%               |
| <b>BMI</b>                   | 314                         | Mean: 21.9 kg/m     | 21.8 kg/m         |
| <b>Marital Status</b>        |                             |                     |                   |
| Married                      | 183                         | 58%                 | 62%               |
| Never Married                | 37                          | 15%                 | 9%                |
| Divorced, Widowed, Separated | 94                          | 30%                 | 28%               |
| <b>Live Births</b>           |                             |                     |                   |
| Yes                          | 212                         | 68%                 | 61%               |
| No                           | 102                         | 6%                  | 39%               |
| <b>Race</b>                  |                             |                     |                   |
| Hispanic                     | 95                          | 18%                 | 13%               |
| White                        | 156                         | 50%                 | 73%               |
| African American             | 46                          | 15%                 | 8%                |
| Other                        | 18                          | 6%                  | 6%                |
| <b>Education Level</b>       |                             |                     |                   |
| No HS degree                 | 58                          | 18%                 | 10%               |
| Graduated HS                 | 67                          | 21%                 | 18%               |
| Some College                 | 99                          | 32%                 | 35%               |
| College Graduate             | 90                          | 29%                 | 37%               |
| <b>Mood</b>                  |                             |                     |                   |
| Rarely if ever depressed     | 286                         | 91%                 | 94%               |
| Usually depressed            | 28                          | 9%                  | 6%                |
| <b>Self Esteem</b>           |                             |                     |                   |
| Usually feel good about self | 296                         | 94%                 | 95%               |
| Feel bad about self          | 18                          | 6%                  | 5%                |

When looking at the control variables in the sample it was found that most of the normal weight women (73%) were White. Most of these normal weight women in the sample also had a least some college (35%) or had a higher degree (37%). In addition, most of the normal weight women almost always felt good about themselves (95%) and didn't experience extended periods of depression, if they had any depression at all (94%).

Next, In order to determine simple relationships between the dependent and two independent variables, I conducted two separate cross-tabulations, as shown in Table

2. In the first cross-tabulation, I analyzed the relationship between weight perception and marital status and in the second cross-tabulation I examined the relationship between live births and weight perception. When weight perception and marital status were compared, it was found that, in the sample, 89% of normal weight women who have never been married thought they were normal/underweight whereas 79% of normal weight, married women perceived themselves as normal/underweight. Furthermore, in this sample only 11% of normal weight, never-married women thought they were overweight compared to 21% of normal weight, married women who perceived themselves as overweight. Given that the high majority of normal weight women see themselves as either underweight or normal weight, a 10% difference between marital status groups in the percentage of those who see themselves as overweight can be considered relatively large. Yet married, normal weight women are slightly more likely to see themselves as overweight, which is the opposite of what was originally hypothesized.

When evaluating the weight perceptions found when comparing women who have and have not given birth, differences were slightly smaller than those found when weight perception and marital status were compared. It was found that, in this sample, 80% of normal weight women who had given birth and 84% of normal weight women who had never given birth, perceived themselves as normal/underweight. Therefore, only 20% of normal weight women in this sample who had given birth thought they were overweight and 16% of normal weight women who had never given birth shared the same opinion. These findings appear to provide initial support to the hypothesis that women who have given birth are more likely to consider themselves overweight.

However, compared to the 10% difference between married and non-married women, this 4% difference appears to be too minor to make any definite conclusions.

Table 2: Cross-Tabulations

|                | Weight perception  |            |       |
|----------------|--------------------|------------|-------|
| Marital Status | Normal/underweight | Overweight | Total |
| Never Married  | 89.19%             | 10.81%     | 100%  |
| Married        | 79.23%             | 20.77%     | 100%  |
| Total          | 80.91%             | 19.09%     | 100%  |

|             | Weight perception  |            |       |
|-------------|--------------------|------------|-------|
| Given Birth | Normal/underweight | Overweight | Total |
| Yes         | 80.19%             | 19.81%     | 100%  |
| No          | 84.31%             | 15.69%     | 100%  |
| Total       | 81.53%             | 18.47%     | 100%  |

Next, in order to determine the statistical significance of these associations net of control variables, I ran a multivariate logistic regression analysis utilizing the sample weights. The results are shown in Table 3. In addition to the variables used in the cross-tabulation (i.e., weight perception, marital status and live births), I include the following control variables: race, education level (edulvl), BMI (bmx bmi), depression (negmood), and self-esteem (negse).

Of the independent variables (marital status and live births), only the variable asking whether the woman had given birth or not was statistically significant with a p-value of 0.007. According to the odds ratio, normal weight women who have given birth are more likely to perceive themselves as overweight relative to normal weight women who have never had a baby. This finding appears to support the hypothesis relating to women who have and have not given birth.

In looking at the control variables, three were found to be statistically significant. When considering race, the value for normal weight, white women had a p-value of

0.039. When viewing the odds ratio, it is found that normal weight, white women are more likely to view themselves as overweight than normal weight Hispanic women. When looking at BMI, an extremely significant p-value of 0.000 was found. As expected, as a normal weight woman's BMI increases, it becomes much more likely that she will view herself as overweight. Finally, the variable expressing frequency of depression has another very significant p-value of 0.002; and the odds ratio states that normal weight women who are depressed more often have a much higher likelihood of viewing themselves as overweight than normal weight women who are rarely, if ever, depressed.

Table 3: Logistic Regression of weighted data predicting whether normal weight women see themselves as overweight

| <b>Weight Perception</b>                          | <b>Odds ratio</b> | <b>Std. Err.</b> | <b>z</b> | <b>P&gt;  z </b> |
|---|-------------------|------------------|----------|------------------|
| <b>Marital Status</b>                             |                   |                  |          |                  |
| Married   | 2.1               | 1.07             | 1.45     | 0.148            |
| Widowed/Divorced Separated                        | 0.34              | 0.23             | -1.57    | 0.116            |
| <b>Live Birth?</b>                                | 3.96              | 2.02             | 2.68     | 0.007            |
| <b>Race (reference = Hispanic)</b>                |                   |                  |          |                  |
| White   | 2.92              | 1.52             | 2.06     | 0.039            |
| Black   | 0.33              | 0.25             | -1.44    | 0.15             |
| other   | 4.59              | 4.8              | 1.46     | 0.145            |
| <b>Education Level (reference = no HS degree)</b> |                   |                  |          |                  |
| High School Graduate                              | 3.35              | 1.43             | 1.41     | 0.159            |
| Some College                                      | 1.99              | 1.21             | 1.13     | 0.258            |
| College Graduate                                  | 1.6               | 0.98             | 0.77     | 0.442            |
| <b>BMI</b>  | 2.85              | 0.41             | 7.27     | 0                |
| <b>Depressed Mood</b>                             | 8.26              | 5.55             | 3.14     | 0.002            |
| <b>Low Self esteem</b>                            | 1.96              | 1.26             | 1.04     | 0.299            |
| <b>_cons</b>                                      | 6.47E-14          | 2.44E-13         | -8.06    | 0                |

## **Chapter 3: Conclusion**

### **Discussion**

Overall, only one of the original hypotheses was supported: Women who have given birth are more likely to view themselves as overweight than women who have never given birth. The data reveal that women who have never given birth have a more accurate weight perception; however, there is no statistical support for the prediction that normal weight, married women have a more accurate weight perception than normal weight, never married women. In fact, the cross-tabulations suggest that normal weight, married women are more likely to view themselves as overweight than normal weight, never married women. This suggestion is actually opposite of what was initially predicted about never married and married women.

There were also significant findings for the control variables. Consistent with prior research, normal weight, white women are more likely to consider themselves overweight than normal weight, Hispanic women. This is most likely due to cultural differences. Also consistent with previous findings, as BMI increases, normal weight women are more likely to perceive themselves as overweight. The final significance was also found in previous studies: women who are depressed more often are much more likely to see themselves as overweight than women who are never depressed. This further confirms the finding that well being is positively correlated with weight perception. The happier someone is, the more accurate their weight perception will be and the more depressed someone is, the less accurate their weight perception will be.

### **Limitations**

Considering this was a study that utilized previously collected data for general research purposes there were a number of limitations. Because data wasn't specifically

collected for this study, many women weren't required to answer every question that was necessary for my study, and therefore had missing data. Consequently, there were a small amount of women that actually qualified for the data analysis of this study. If there had been more participants, there may have been more women across my comparison categories, such as those who have never been married and those who perceive themselves as overweight. The small sample size, in fact, may have actually been the cause for the lack of any statistical significance when comparing marital status and weight perception. In fact, there was a large difference between the number of never married and married women in the sample, with married women being the dominating category; the number of never married women was much too small to do an accurate comparison. Another limitation was that this study included only women who had or did not have biological children. Women who have adopted, have step children or utilized a surrogate were not considered. Including these women in the "with children" category may have altered the outcome.

## **Conclusions**

Because this topic hasn't been extensively studied, more research must be done in order to realize the true effect of marital status and having children on weight perception. Most importantly, a study developed specifically for this topic must be done. This would allow for a larger group of participants as well as a more even distribution of the values of certain variables, such as those who are married versus never married and those who view themselves as overweight versus about right. Furthermore, a more extensive study including all women who have children, whether they have given birth or not, should be analyzed. With these changes, a different result may be found.

Currently, there is not enough data on the topic to come to a solid conclusion.

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