COMPARISON OF FACTORS INFLUENCING BODY WEIGHT AMONG DIVERSE INDIVIDUALS RECEIVING FOOD STAMPS

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CHAPTER I

INTRODUCTION

Food insecurity is a reported issue among limited income households in the United States.; U.S. federal food support programs, such as the Food Stamp Program (FSP) assist limited-income households in avoiding hunger. However, food stamp recipients have a high prevalence of overweight and a high risk for food insecurity (Stuff et al. 2004; Townsend et al. 2001). Research has indicated a positive relationship between long-term food stamp program participation and the prevalence of obesity (Gibson 2006). Previous studies indicate that women in food insecure households have a higher body mass index (BMI) than women in food secure households (Jones and Frongillo 2006). Shariff and Khor (2005) reported a positive relationship between household food insecurity and obesity in Malaysia (Shariff and Khor 2005). According to Oh and Hong (2003), children in Korea from food insecure households were heavier than children from food secure households. Furthermore, adults in food-insecure households self-reported their mental and physical health status as poorer than adults in food secure households (Oh and Hong 2003). In addition, there was a significant positive relation between good health status and food security status (Stuff et al. 2004). Overall, a strong relationship exists between food insecurity and overweight.

Additional factors which may influence body weight include self-esteem and body image. Davison and McCabe indicate that low self-esteem has a negative impact on both body image and day-to-day functioning (Davison and McCabe 2005). Abell and Richards found that a significant relationship existed between body image and self-esteem among both males and females (Abell and Richards 1996). However, some

reports indicate that as men and women get older they are less concerned about the social aspects of body image than younger individuals (Davison and McCabe 2005).

Socioeconomic status (SES) is also positively correlated with self-esteem and body image. Females from higher socioeconomic groups tend to be more satisfied with their body weight and have a better overall self-esteem than women with limited resources (Abell and Richards 1996). According to Townsend, lower income households are more likely to experience food insecurity and are also at increased risk for being overweight or obese (Townsend et al. 2001). Another socioeconomic factor that can be used to indicate risk for overweight and obesity is the level of education. Townsend found that there were positive correlations between the number of years of education completed and the experience of food insecurity (Townsend et al. 2001). Winkleby et al. reported that the highest prevalence of severe overweight was among the least educated Hispanic women (31.4%) (Winkleby, Gardner, and Taylor 1996).

Studies indicate that being overweight has an impact on body satisfaction among diverse ethnic groups. In previous studies examining body satisfaction, differences are reported among adolescent girls of diverse ethnic groups. African American school girls generally have higher body mass index (BMI) values as compared to other ethnic groups while White school girls tend to be more concerned about their body image than either African American or mixed race girls (Caradas, Lambert, and Charlton 2001). In addition, African American girls tend to be less focused on body weight than White girls and they are more likely to be satisfied with their bodies at all BMI levels (Neumark-Sztainer et al. 1999).

Reports indicate that African Americans prefer heavier body types than other ethnic groups and that they are more likely to be satisfied with their body size as compared to other ethnic groups. In general, Whites have a greater desire to change their body weight than African Americans, based on cultural differences (Simeon et al. 2003). The disparity between estimated current body image and ideal body image has been described as Body Discrepancy (BD). Fitzgibbon et al. indicated that White women revealed Body Discrepancy (BD) at lower levels of Body Mass Index (BMI) than African American or Hispanic women (Fitzgibbon, Blackman, and Avellone 2000). Hispanic women and men had significantly higher desired BMI levels than White women and men. ($p<0.01$) (Winkleby, Gardner, and Taylor 1996). Thus, African American and Hispanic women did not feel a discrepancy between current and ideal body weight until they were overweight (Fitzgibbon, Blackman, and Avellone 2000).

Understanding social and cultural dimensions of body weight is of special concern for the state of Oklahoma where disparities in problems related to overweight are prevalent (Oklahoma State Department of Health 2002). There are few published studies regarding factors influencing body weight among food stamp participants. The purpose of this study is to obtain a greater understanding of factors influencing body weight among diverse racial/ethnic groups receiving Food Stamps.

Hypotheses

H_0: There is no significant difference in the level of body image satisfaction among diverse ethnic groups receiving food stamps in Oklahoma.

H_1: There is a significant difference in the level of body image satisfaction among diverse ethnic groups receiving food stamps in Oklahoma.

H_0: There is no significant difference in the score of body image importance among diverse ethnic groups receiving food stamps in Oklahoma.

H_2: There is a significant difference in the score of body image importance among diverse ethnic groups receiving food stamps in Oklahoma.

$H_{0:}$ There is no significant difference in the score of body image behavior among diverse ethnic groups receiving food stamps in Oklahoma.

H_3: There is a significant difference in the score of body image behavior among diverse ethnic groups receiving food stamps in Oklahoma.

H_0: There is no significant difference in measure of positive self-esteem among diverse ethnic groups receiving food stamps in Oklahoma.

H_4: There is a significant difference in measure of positive self-esteem among diverse ethnic groups receiving food stamps in Oklahoma.

H_0: There is no significant difference in measure of negative self-esteem among diverse ethnic groups receiving food stamps in Oklahoma.

H_5: There is a significant difference in measure of negative self-esteem among diverse ethnic groups receiving food stamps in Oklahoma.

H_0: There is no significant difference in the rate of food insecurity among diverse ethnic groups receiving food stamps in Oklahoma.

H_6: There is a significant difference in the rate of food insecurity among diverse ethnic groups receiving food stamps in Oklahoma.

H_0: There is no significant difference in the score of the discrimination among diverse ethnic groups receiving food stamps in Oklahoma.

H_7: There is a significant difference in the score of the discrimination among diverse ethnic groups receiving food stamps in Oklahoma.

H_0: There is no significant difference in the score of the ethnic identity among diverse ethnic groups receiving food stamps in Oklahoma.

H_8: There is a significant difference in the score of the ethnic identity among diverse ethnic groups receiving food stamps in Oklahoma.

H_0: There is no significant difference in the Body Mass Index among diverse ethnic groups receiving food stamps in Oklahoma.

H_9: There is a significant difference in the Body Mass Index among diverse ethnic groups receiving food stamps in Oklahoma.

Assumptions

1. All telephone survey interviewers were trained to gain accurate responses.
2. Respondents would be willing to participate honestly in the telephone survey.

Limitations

1. The sample may not be representative views of an entire group because this study was limited to people who are 30-44 years of age and receive food stamps in the state of Oklahoma.
2. Information could be limited from respondents due to lack of explanation through the telephone survey of concepts associated with the questionnaire, such as body image, body shape, and muscle size.
3. Due to the characteristics of telephone survey, the following people might have been excluded by accident:
    - People who are not listed because they do not have phone lines.
    - People whose phones have been disconnected.
    - People whose phone numbers have changed.
    - Hearing impaired people who receive food stamps.

Definitions of Terms

Body Mass Index (BMI): "BMI is weight in kilograms divided by height in meters squared. BMI is a number calculated from a person's weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems" (*The Centers for Disease Control and Prevention (CDC)*).

Body Image: "A multidimensional self-attitude toward one's body, particularly its size, shape and aesthetics. A person's evaluations and affective experiences regarding their physical attributes, as well as their investments in appearance as a domain" (Cash, Ancis, and Strachan 1997).

Body Discrepancy (BD): " A discrepancy between an individual's current and ideal body image may reflect body dissatisfaction and may be a factor that stimulates attentions to weight loss activities" (Fitzgibbon, Blackman, and Avellone 2000).

Body dissatisfaction: "Dissatisfaction with overall shape and size of regions of the body of greatest concern to those with eating disorders; stomach, hips, thighs, and buttocks" (Garner 1984).

Food insecurity: "the limited or uncertain availability of nutritionally adequate and safe foods and limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (Abell and Richards 1996).

Food Stamp Program: "The U.S. Food Stamp Program (FSP) is the Nation's largest nutrition program for low-income Americans and a source of demand for the products of American farmers and food industries. The program provides benefits with electronic

debit cards, which participants may use to buy food from eligible retailers”(*United States Department of Agriculture*).

Overweight: An adult who has a BMI between 25 and 29.9 is considered overweight (*The Centers for Disease Control and Prevention (CDC)*).

Obesity: An adult who has a BMI of 30 or higher is considered obese (*The Centers for Disease Control and Prevention (CDC)*).

CHAPTER II

REVIEW OF LITERATURE

Prevalence of overweight and obesity in the United States

The continuing increase in the prevalence of overweight and obesity are among the major health concerns of health professionals in the United States. Body Mass Index (BMI) is a method used to classify weight status and is currently the indicator used for weight classification by the Centers for Disease Control and Prevention (CDC) (*The Centers for Disease Control and Prevention (CDC)*). A BMI greater than 25 kg/m² for adults is defined as overweight and a BMI of over 30 kg/m² for adults is considered as obese (*The Centers for Disease Control and Prevention (CDC)*).

The prevalence of overweight and obesity for both U.S. adults and children has increased drastically in recent years. According to data from the National Center for Health Statistics, about two-thirds (66%) of U.S adults are overweight or obese and the prevalence of overweight has steadily increased from 44.8 % to 66 % in U.S adults aged 20 to 74 from 1960 to 2004 (National Center for Health Statistics 2006).

Estimates of the prevalence of obesity measured by the National Health and Nutrition Examination Survey (NHANES) from 1999-2000 were examined to explore the differences in prevalence of overweight and obesity. Weight and height were measured from 3,958 children and adolescents aged 2 to 19 years and 4,431 adults aged 20 years or

older during 2003-2004. The prevalence of overweight, obesity and extreme obesity for adults aged 20 years or over were compared over time using data from NHANES surveys. Results showed that 32.2% of adults were obese and 17.1% of children and adolescents were overweight. There were significant increases in the prevalence of overweight among children and adolescents (p=.0396 for males and p=.0463 for females) and obesity among men (p=.02) from 1999-2000 to 2003-2004 (Ogden et al. 2006).

Data indicate that there are substantial gender differences in overweight while there are only minor gender differences in obesity. Ogden et al. (2006) indicated that the prevalence of overweight among male children and adolescents (p=.01) and obesity among men (p=.02) continuously increased between 1999-2000 and 2003- 2004. However, no significant increase in overweight and obesity were evident among female children and adolescents (p=.10) (Ogden et al. 2006). Overweight and obesity rates from 2006 indicate 30.4% among males and 45.8% among females according to the CDC'S Behavioral Risk Factor Surveillance System (BRFSS) (*Behavioral Risk Factor Surveillance System, 2006*). Males (43.7%) were more likely to be overweight than females (29.6%) (*Behavioral Risk Factor Surveillance System, 2006*). However, there were no significant gender differences in obesity between males (25.5%) and females (24.5%) (*Behavioral Risk Factor Surveillance System, 2006*). Overall, males have a higher rate of overweight and obesity than females. However, this trend does not seem to be consistent for low income men. Townsend et al. indicate that no significant positive association between food insecurity and overweight was found in men compared to

women (p=0.44) (Townsend et al. 2001). Furthermore, Gibson suggested that the lack of a relationship between food insecurity and obesity for low income men may be explained by lower male participation in the FSP than female (Gibson 2003).

Racial and ethnic disparities in overweight and obesity are common. Ogden et al (2006) indicated that there were significant differences between racial/ethnic groups during 1999-2004. The prevalence of overweight in Hispanic American children and adolescents were significantly higher than non-Hispanic White children and adolescents. In addition, Hispanic American (75.4%) and non-Hispanic African American women (81.6%) had a significantly higher level of obesity compared to non-Hispanic White women (58%) (Ogden et al. 2006). According to the CDC'S Behavioral Risk Factor Surveillance System (BRFSS, 2006), Hispanic groups had the highest percentage of overweight (37.7%) followed by 36.8% among Whites (*Behavioral Risk Factor Surveillance System, 2006*). In regards to the obesity category, African American groups had higher percentage (36.7%) of obesity than other ethnic groups (*Behavioral Risk Factor Surveillance System, 2006*). In reports from 2003 from the Trust for America's Health, data indicate that African American adults had the highest percentage of obesity in the U.S.(*Health Disparities: Oklahoma 2007*). Generally, racial and ethnic minorities have higher rates of overweight and obesity than do Whites in the United States.

Prevalence of overweight and obesity in Oklahoma

The percentage of obesity in the U.S was 23.2% in 2004, and Oklahoma had higher rates of obesity than the nationwide average with 24.9% of individuals being classified as obese (*Health Disparities: Oklahoma 2007*). According to the Trust for America's Health in 2006, Oklahoma was ranked in the top 10 among states with the highest obesity rates in America (*Health Disparities: Oklahoma 2007*).

Gender disparities in overweight and obesity are evident in Oklahoma. Males are more likely to be overweight and obese than females. The percentage of females with a BMI less than 24.9 (43.5%) was higher than that of males with a BMI less than 24.9 (27%) (*Behavioral Risk Factor Surveillance System, 2006*). In contrast, the percentage of males classified as overweight (42.4%) was higher than that of females (29.6%) (*Behavioral Risk Factor Surveillance System, 2006*). Furthermore, males (30.6%) were significantly more likely to be obese than females (26.9%) according to the CDC'S Behavioral Risk Factor Surveillance System (BRFSS) (*Behavioral Risk Factor Surveillance System, 2006*). Gender differences in Oklahoma mirror national trends in that males have higher rates of overweight and obesity. In contrast, Croft et al. indicated that the mean BMI for low SES African American women was 1.5kg/ m^2 higher than for high SES African American women, while BMI did not vary with SES level among African American men (Croft et al. 1992). Adams et al. also found that women from food insecure households were more affected by overweight and obesity than women from food secure households (Adams, Grummer-Strawn, and Chavez 2003).

In terms of ethnic differences in Oklahoma, there are substantial differences within African American and Hispanic groups with higher percentages classified as obese as compared to White groups in Oklahoma. According to the CDC'S Behavioral Risk Factor Surveillance System in 2006, African American (32.9%) and Hispanic (31.3%) groups were more likely to be overweight compared to White groups (27.6%) in Oklahoma (BRFSS) (*Behavioral Risk Factor Surveillance System, 2006*). According to the Trust for America's Health, Hispanic adults in Oklahoma in 2003 were more likely to be obese than other ethnic groups (*Health Disparities: Oklahoma 2007*). Compared to National rates, the differences between minority groups and White groups with respect to obesity are consistent with national trends.

Food insecurity, a risk factor for overweight

Food insecurity is defined by the United States Department of Agriculture (USDA) as being unable to acquire enough food to meet the needs of all family members because of inadequate money or other resources for food. Given this premise, being overweight is usually related to a plentiful food supply and being underweight related to hunger. Interestingly, in recent years, studies have found a positive correlation between food insecurity and the prevalence of overweight. Members of food insecure households have a higher prevalence of obesity than members of food secure households.

Numerous studies have documented the positive relationship between food insecurity and overweight. Townsend et al. used the 1994 to 1996 Continuing Survey of

Food Intakes by Individual (CSFII) to examine the relationship between food insecurity and obesity. The prevalence of obesity was examined with 11 independent variables which included poverty, education, age, ethnicity, food stamp participation, welfare, fat, saturated fat, total energy, vigorous exercise and TV/video watching. Findings from this study indicated that food insecurity was significantly associated with overweight for women ($n=4509$, $p<0.0001$), but there was not a significant relationship observed for men ($n=4970$, $p=0.44$) (Townsend et al. 2001).

Similarly, the Washington State Department of Health analyzed statewide data from the 1995-1999 BRFSS including 3,252 men and women aged 18 > years to examine the relationship between food insecurity and obesity. VanEnwyk and Sabel found that persons classified as food insecure (24.7% adjusted odds ratio [OR] 1.3, 95% CI 1.0 to 1.8) were more likely to be obese than those who were food secure (18.1%) (VanEenwyk and Sabel 2003).

When Olson (1999) examined the influence that food insecurity had on women of child bearing age, findings were similar to that of Townsend et al. Data from 193 randomly selected women, ages 20-39 years were collected. Women in food-insecure households had a significantly higher BMI (28.2 kg/m^2) than women in food-secure households (25.6 kg/m^2, $p<0.05$). Furthermore, after controlling all variables, such as height, income level, educational level, single parent status, and employment status, a positive but non-significant ($p=0.06$) relation between food insecurity and BMI remained (Olson 1999).

Adams et al. (2003) also examined the relationship between food insecurity and obesity in women living in California in 1998 and 1999. Data was obtained from the 1998 and 1999 California Women's Health Survey (CWHS). The U.S Household Food Security Module (HHFSM) was used to evaluate food insecurity. Chi-square and logistic regression analyses were used to examine the relation between food security status and obesity. The results of analyses indicated that non-Hispanic White (NHW) women who were food insecure without hunger were 36% more likely to be obese than those who were food secure. However, there was no advanced risk of obesity with increasing severity of food insecurity with hunger. In contrast, Asian, African American, and Hispanic women experienced an increased prevalence of obesity as food insecurity became more severe. Overall, the risk of obesity increased with growing severity of food insecurity. In addition, women who were in food insecure households with hunger were 2.8 times more likely to be obese than those who were in food secure households (Adams, Grummer-Strawn, and Chavez 2003).

Findings from Kaiser et al. (2004) support those of Adams et al. in that the risk of obesity increased with growing severity of food insecurity. They examined the relationship between food insecurity and weight status among 559 low-income Hispanic women. In a cross sectional study, data were collected from February to May 2001 in 6 California counties. They used a subscale of the U.S. Food Security Survey (FSS) module for food insecurity measurement. Analysis of variance, Mantel-Haeszel chi-square test, and logistic regression were used for data analysis. Finding from this study indicate that

women's experience of food insecurity with hunger was significantly related to obesity status using the 10-item subscale (p=0.03, OR: 1.98, 95% CI: 1.14, 3.53) or 4-item subscale (p=0.02). However, no significant relationship was found among food insecurity without hunger (Kaiser et al. 2004). Overall, these results consistently support the positive relationship between food insecurity and overweight.

This strong positive relationship between food insecurity and overweight was also supported by Shariff and Khor (2005). They examined 140 Malaysian women and 60 Indian women, who were selected from rural communities in Malaysia, to explore whether there is a relationship between food insecurity and obesity. Study methods included in-depth interviews, demographic and socioeconomic data. The researcher collected a 24-h dietary recall and non quantitative food-frequency questionnaire (FFQ) including 58 common food items among the Malay and Indian ethnic groups. In addition, the data for women's daily activities were divided into four groups: economic, domestic, leisure, and sports activities. Of these women, 80.5% had an average of 7 years of formal education. Generally, there was more food insecurity in housewives than in working women. Significant differences in BMI were also noted according to food security status. Women in food secure households indicated that they spent more time on income and non-income-generated activities than domestic activities. Also, women from food insecure households (32-47%) appeared to have a significantly higher waist circumference than women from food secure households (29%). Women from food insecure households were more likely to spend their time (8-9 h) on domestic activities

and leisure time than women from food secure households (7.6 h), which was related to higher waist circumference (Shariff and Khor 2005). Overall, findings from this study are similar to those of Townsend et al., Adams et al., Kaiser et al, and Olson which indicate that the risk of obesity is significantly associated with food insecurity.

Not only is there a positive correlation between food insecurity and overweight in women, but also in children. Oh and Hong (2003) examined the relationship among food insecurity, body size, and dietary intake in Korean children from low-income households in Seoul, Korea. This study was conducted with 370 children aged 4-12 years and their caretakers from 12 community welfare centers during June to August 2001. The results from this study showed that 62.7% of households reported that they had experienced food insecurity, and they reported that they had a lower education level, and less nutritional knowledge. Moreover, they were more concerned about purchasing food than those living in food secure households. In addition, children from food insecure households were reportedly heavier than children from food secure households. Another finding from this study was that intake of calcium, iron, and riboflavin intake was less among children from food insecure households (Oh and Hong 2003).

The relationship between food insecurity and overweight in children is consistent in the U.S. Using the data from the Early Childhood Longitudinal Study-Kindergarten Cohort, Jyoti et al. (2005) investigated the relationship between food insecurity and developmental aspects of academic performance, weight gain, and social skills for U.S. children. Their prospective sample consisted of 11,460 children in 1998. They measured

food insecurity by using the 18-item U.S. Food Security Survey module. Children's parents were surveyed and children's weight and height were directly measured. Results from this study showed that children from persistently food insecure households had a 0.35 higher increase in BMI than those from consistently food secure households ($p<0.028$). In terms of gender differences, this finding was significant among girls, but not among boys ($p<0.021$) (Jyoti, Frongillo, and Jones 2005).

Reports from Stuff et al. (2004) found that not only is food insecurity associated with overweight, but also with poor physical health and poor mental health. This study examined household food insecurity among the lower Mississippi Delta region of Arkansas, Louisiana, and Mississippi. It was conducted using telephone interviews and questionnaires based on the U.S. Food Security Survey module. The results showed that 20.3% of the 1,448 households experienced food insecurity, and adults in food insecure households scored their mental and physical health status as poorer based on their self-reporting ($p<0.0001$). In addition, there was a significant relationship between good health status and food security status ($p<0.0001$). Moreover, as income levels increased reports of good health status also increased (Stuff et al. 2004).

Not only has food insecurity been linked with poor health and impaired cognitive abilities, but also psychosocial development in children. Olson investigated the psychosocial consequences of food insecurity and hunger for school-age children; this study used the Community Childhood Hunger Identification Project (CCHIP) to measure hunger. Two- hundred-and-four children participated in this study from two schools in

Baltimore and two schools in Philadelphia. The Pediatric Symptom Checklist (PSC) was also used to measure psychological problems. The results show that children who had risk of hunger had a significantly higher mean score on PSC ($p<0.001$). This means that children who had a hunger issue were more likely to have a high risk of psychological problems (Olson 1999).

Another study by Gulliford et al. (2005) investigated food security status and weight control behaviors in adolescents. The samples were randomly selected from a list of 101 secondary schools in Trinidad, West Indies. The questionnaires included the short-form, six-item household food security module as described by Blumberg et al. and responses were self-reported by students. Subjects were asked to complete questions concerning their weight perceptions, weight intentions and physical activity. Their findings indicated that boys and girls were concerned about being 'too heavy' and their intentions of 'trying to lose weight' increased with increased BMI. However, when boys and girls had the same BMI, girls were more concerned about being too heavy and trying to lose weight. 'Trying to gain weight' was more frequently experienced in the food insecure group (32%) than food secure group (25%). Also, less physical activity was more likely in the food insecure group (47%) than the food secure group (39%, $p=0.003$). Food insecurity status was not related to weight perceptions or intention to lose weight. In general, subjects who experienced food insecurity were more likely to gain weight and were less physically active than groups in food secure households (Gulliford, Nunes, and Rocke 2005).

Using a data set from 1999-2001 and 2001-2002 the National Health and Nutrition Examination Survey (NHANES), Wilde and Peterman (2006) examined the relationship between food security status and changes in weight over time. These data provided information about household food security status and changes in weight over 12 months. Household food insecurity categories were divided as follows: fully food secure, marginally food secure, food insecure without hunger and food insecure with hunger. Weight and height were self-reported. Cross-sectional comparisons were used for the analysis. Analyses of data indicated that 3.62% of women and 3.6% of men were food insecure with hunger. The prevalence of obesity for women was lowest in fully food secure households (30.85%). Furthermore, BMI for women was significantly higher for those in food insecure households with hunger (72.28%) than women in fully food secure and food insecure without hunger ($p<0.05$). For men, there was a moderately lower overweight percentage when food insecure without hunger than when living in fully food secures households. The prevalence of gaining 4.54 kg over 1 year was lowest for women in fully food secure households and moderately higher for women in marginally food secure households. For men, the prevalence of gaining 4.54 kg over 1 year was lowest for those in fully food secure households and moderately higher for those in marginally food secure households. Overall, the rate of overweight increased as food insecurity worsened and the prevalence of an increase in weight over 12 months appeared highest among those living in food insecure households (Wilde and Peterman 2006).

While the studies discussed in this section indicate a positive relation between food insecurity and increased risk of overweight, there were some limitations to providing a causal inference. Jones and Frongillo (2006) hypothesized that food insecurity could be a stressor in a woman's life which leads to a stress-induced weight change. That is, when women receive food stamps, this could ameliorate food insecure stress and minimize the effects of food insecurity on weight gain. To examine this hypothesis, this study used data from the Panel Study of Income Dynamics (PSID) including 6,241 families who participated in 1999 and 2001. The results from this study showed that the majority of the women in this sample lived in food secure households, were middle-aged, and high-school educated, while women in food insecure households were younger than women in food secure, had low "education level", and had lower incomes than women in food secure households. In addition, food insecure women were more likely to be African American or Hispanic and report their health as fair or poor. The prevalence of overweight for women in food insecure households in 1999 (61.3%) was higher than women in food secure households (56.7%) (Jones and Frongillo 2006).

In terms of racial differences, several studies indicated that significant differences existed among racial groups. Results from VanEnwyk and Sabel's study (2003) found that African Americans, American Indians/Alaska Natives, and Hispanics were more likely to be obese than Whites, Non-Hispanics, and Asians (VanEenwyk and Sabel 2003). Findings from Adams el al. (2003) show that African Americans (52.1%) who lived in food insecure households with hunger had the highest prevalence of obesity followed by

Hispanic groups (42.1%) (Adams, Grummer-Strawn, and Chavez 2003). Overall research shows that racial minorities, in general, have the highest prevalence of overweight.

Winkleby et al. (1996) examined the effect of gender and socioeconomic factors on ethnic differences in BMI using matched pairs of Hispanics and Whites. Findings from this study indicated that Hispanic women and men both had significantly higher BMI levels than White women and men ($p<0.001$) (Winkleby, Gardner, and Taylor 1996). Furthermore, Stuff et al. indicated that within food insecure households, physical and general health was better in black than in Whites participants ($p<0.0001$) (Stuff et al. 2004).

Another study from Bhattacharya et al. (2004), examined the relationship between nutritional status, poverty, and food insecurity. In a cross-sectional study, data were collected from the National Health and Nutrition Examination Survey (NHANE III) including samples aged 18 to 64 years old (N=11,853) and 2 to 17 years old (N=9,502). Findings from this study, for adults aged 18 to 64 years, showed that there was a significant and positive relationship between self-reported food insecurity and obesity for Whites ($p<0.10$) and Hispanics ($p<0.10$) but not for African Americans. For children aged 2 to 17 years old, they also found that the significant positive relationship between food insecurity and overweight existed among Hispanics ($p<0.05$), but not for African American or White children (Bhattacharya, Currie, and Haider 2004).

Using the data set from the NHANES III, Alaimo et al. (2001) investigated whether there was a relationship between family income, food insufficiency, and being

overweight among U.S. children aged 2 to 7 and 8 to 16 years. The results showed that the prevalence of overweight among older non-Hispanic White children in low income households was significantly higher than children in households with higher incomes. However, no significant differences were found from younger non-Hispanic White children, non-Hispanic African American children, or Hispanic American children. Additionally findings from this study indicated that the non-Hispanic White girls aged 8 to 16 from food insufficient households were 3.5 times more likely to be obese than those from food sufficient households ($p<0.10$) (Alaimo, Olson, and Frongillo 2001).

Food stamp program participation and overweight.

In 1995, Dietx introduced the case study describing an obese 7-year-old African American girl whose family participated in FSP. According to this case study, in an effort to purchase low-caloric, healthy food which is more expensive they often ran out of money and food stamps by the end of month. Therefore, the mother was forced to purchase less expensive high-fat foods to feed her daughter which were identified as a potential contributor to her obesity. Dietx proposed a relationship between hunger and obesity although seemingly a paradoxical one (Dietz 1995). Over time, increasing research supports a relationship between food insecurity and obesity.

Townsend et al. (2001) suggested that the Food Stamp Program may play a role in this paradoxical phenomenon and suggested that the "food stamp cycle" may affect food

purchasing and eating. Townsend et al. proposed that during the first three weeks of the month, individuals eat an abundance of food. However, after this time food stamps become limited during the last few weeks of the month. Therefore, when food stamps are available, individuals may overeat. Townsend et al. also showed that receiving food stamps is a significant predictor of overweight, even after adjusting for other variables such as, socioeconomic, demographic, government assistance, environment, and lifestyle variables ($p<0.01$ OR 1.38, 95% CI 1.07 TO 1.78) In terms of racial differences, Townsend et al. documented that Native Americans (64.5%) were highest in overweight prevalence, followed by African Americans (57.1%), and Hispanics (38.5%) (Townsend et al. 2001).

Several studies have explored the relationship between FSP participation and overweight among adults. Finding from Jones and Frongillo (2006) indicated that the prevalence of overweight for food stamp participants was higher (65.1%) than those who were not participants (47.3%). As for changes in body weight, no significant differences between food insecure status and food secure status were observed. The researchers only found that women in long-term food stamp participation experienced smaller increase in weight (Jones and Frongillo 2006).

When Gibson (2003) examined the positive relationship between current and long-term FSP participation and obesity using the 1979 National Longitudinal Survey of Youth, results from this study were consistent with Townsend et al. Gibson defined long-term FSP participation as at least five years. They analyzed current participation and

long-term participation to predict probability of obesity. Results from this study showed that there was significant positive relationship between current and long-term FSP participation and obesity among low income women ($p<0.05$), but not low income men. In addition, current FSP participation was associated with a 9.1% increase in the predicted probability of current obesity among low income women. Compared to no participation in FSP over five years, there was approximately a 20.5% increase of the predicted probability of current obesity for those who participated in the FSP in the defined time period (Gibson 2003).

Another study by Gibson (2004) used the National Longitudinal Survey of Youth 1979 Child Sample to examine the relationship between long-term FSP participation and overweight in children. There was a significantly positive relationship between long-term FSP participation and overweight in young girls ($p=0.048$), but not in young boys ($p=0.10$). Results also showed a 42.8% increase in the predicted probability of overweight among young girls, and a 28.8% increase in the predicted probability of overweight among young boys whose families did not participate in the FSP during the previous 5 years compared to those of non participation in FSP. However, no significant relationship between long-term FSP participation and overweight was found in older children. Overall, FSP participation may be a potential factor contributing to overweight and obesity but additional research is necessary (Gibson 2004).

While previous studies found a significant positive correlation between FSP participation and overweight in young girls and low-income women, Gibson (2006)

examined whether these relationships occurred simultaneously for young girls and their mothers using the National longitudinal Survey of Youth 1979. Results from this study indicated that there was a significant positive association between long-term FSP participation and obesity in mother-daughters and maternal obesity at the same time ($p<0.05$). Gibson suggested that the relationship between long-term FSP participation and obesity is associated with a family phenomenon, which is a positive relationship between the weight of parents and children (Gibson 2006).

Several studies have examined whether FSP participation affects nutritional status. Devaney and Morritt (1991) used the 1979-80 survey of food consumption in low-income households to estimate the effect of food stamp participation on household nutritional status. Findings from this study indicated that there was a positive effect of food stamp participation on total intake of food energy, protein, and some micronutrients (Devaney and Moffitt 1991).

Another study from Pérez-Escamilla et al. (2000), examined the association of the Food Stamp participation and nutritional status among low-income children from Hartford, CT. Food insecurity was measured using the Radimer/Cornell hunger scale, and dietary intake was assessed using a single 24-h recall and a 14-item food frequency questionnaire. Results from this study indicated that low-income preschoolers who received food stamps (FS, n=59) were of lower socioeconomic status than those of the Non Food Stamp Participants (NFS, n=40) ($p<0.05$). Furthermore, food insecurity status was significantly lower in those households in which food stamps lasted 4 weeks (4.2%)

than those in households in which food stamps lasted < 4 weeks (24.2%). Results from multivariate analyses indicated significantly higher intakes of vitamin B6 (OR 3.13, 95% CI 1.16-8.45), folate (OR 2.92, 95% CI 1.09-7.81) and iron (OR 3.72, 95% CI 1.31-10.54) among FS children as compared to NFS children. NFS children were also more likely to have an iron consumption of < 8mg/d than FS children (OR 3.73, 95% CI 1.09-12.80). In addition, FS children showed higher levels of consumption of "sodas and artificially flavored beverages" (p=0.056) than NFS children. Findings from this study implied that Food Stamp participation may influence nutrient intake among low-income children, and nutrition education may be needed to improve the food choices made by food stamp recipients (Pérez-Escamilla et al. 2000).

Body image

Recent data indicate that there are disparities in the prevalence of obesity among diverse ethnic groups, predominantly among women classified as minority status. Findings from Ogden et al. indicated that non-Hispanic African American adults (45.0%) showed the highest prevalence of obesity, followed by Hispanic Americans (36.8%) and non-Hispanic White adults (30%) in 2003-2004 (Ogden et al. 2006). According to recent studies food stamp participation and food insecurity status are not the only contributing factors, but also perceptual differences in body image reportedly impact overweight and obesity status.

Miller et al. (2000) examined differences in body image factors and interactions among gender and race/ethnicity. Data was collected from 120 college students ages 18 to 49 years of three racial groups: African American, European American, and Hispanic American. Participants completed a Background Information Sheet, the multi dimensional body-self relations questionnaire (MBSRQ), the body-esteem scale (BES) and the balanced inventory of desirable responding (BIDR). An ANCOVA was used for data analyses to compare racial/ethnic and gender groups. Results from this study indicated that appearance was equally important to all racial groups. However, there were gender differences in some aspects of body image because men (M=137.23) scored higher than women (M=126.10) on appearance evaluation, fitness evaluation, fitness orientation, weight preoccupation and self-classified weight while women scored higher on illness orientation, weight preoccupation and self-classified weight. In addition, there were racial differences in appearance evaluation and body area satisfaction. Significantly higher scores on appearance evaluation and body area satisfaction were noted among African Americans as compared to other ethnic groups ($p < 0.01$). African Americans also exhibited higher scores on BES weight concern and self-esteem regarding their weight. Overall, this study indicated that there were different perceptions of body image among diverse ethnic and gender groups. The researcher suggested that an understanding of multi-cultural factors is needed for future research (Miller et al. 2000).

Another study from Simeon et al. (2003) was conducted in Trinidad, where diverse ethnicities live, in order to examine participants' perceptions of personal body

image and to determine whether there are differences among ethnic groups. In a cross-sectional study, 1,139 adolescents, whose ages ranged from 14 to 17 years, participated in a survey. This study used silhouettes which were categorized into 4 groups including thin, normal, overweight and obese to help determine perceived body size, most attractive body size, and size associated with wealth, health and happiness. Results from this study showed that there was a difference in actual body size but no difference in perceived body size among ethnicities. This study showed that males were more likely to feel happy when they gain weight while females were not. In addition, there was a significant difference among ethnicities in satisfaction with body size. African Americans (68%) were more satisfied with their size compared with other ethnicities (Simeon et al. 2003).

Previous studies have indicated that African American females prefer heavier body sizes and exhibit greater satisfaction with their bodies than White females. A study from Fitzgibbon et al. (2000) examined the relationship between body image discrepancy and body mass index among individuals from different ethnic backgrounds. This study hypothesized that BD (Body Discrepancy) occurs at a lower BMI in White women than in African American or Hispanic women. This study was conducted with 389 women participants who completed a self-report questionnaire and Albert Stunkard's Figure Rating Scale (FRS) which contained nine schematic figures of women to measure differences between perceptions of current body image and ideal body image. In addition, the Short Acculturation Scale (SAS) was used to measure the level of acculturation for Hispanic women because acculturation may be an influencing factor on body image.

Acculturation scores range from 1 indicating low acculturation to 5 indicating high acculturation. The data was analyzed using ANOVA to evaluate differences in demographics and body image factors of the participants from diverse ethnic groups. Linear regression was used to compare relationships between BD and BMI by ethnic groups. Findings from this study showed that there were no differences in BD among ethnic groups. However, White women showed BD at lower levels of BMI than African American or Hispanic women. Furthermore, African American and Hispanic women did not feel a discrepancy between current and ideal body image until they were overweight. However, there are some limitations of this study because they recruited samples from two community places: those recruited from a community-based nutrition program and those from a large university-based teaching hospital to complete a survey. This method of recruiting may not be representative of the general population of White, African American, and Hispanic women (Fitzgibbon, Blackman, and Avellone 2000).

While several studies have explored the relationship between body image and gender/ethnicity, Davison and McCabe (2005) set out to examine relationships between different factors of body image, psychological, social, and sexual functioning throughout different stages of the lifecycle among men and women. Participants included 211 men and 226 women ranging from 18 to 86 years of age. Participants were divided into 3 groups: young adulthood (18-29), middle adulthood (30-49), and late adulthood (50-86). The researchers hypothesized that negative body image would be associated with poor functioning in psychological, social, and sexual contexts. All participants completed the

body image measure, psychological functioning measure, social functioning measure, and sexual functioning measures. In order to determine which aspects of body image were most strongly predictive of psychological, social, and sexual functioning, researchers used hierarchical multiple regression analyses. Results from this study indicated that women had lower levels of body image satisfaction ($p<0.001$) and higher levels of social physique anxiety ($p<0.001$) than men. They also reported concealing their body more often than men did. When researchers controlled BMI, there were significant differences between age groups because men and women whose ages were between 30 and 40 had more dissatisfaction than any other adult group. This age group was also more concern about their bodies and engaged in more attempts to hide their bodies. However, those who were over 50 years of age tended to have less concern about others evaluating their bodies. Self-esteem was the strongest factor in predicting body image and day-to-day functioning of the participants. Furthermore, as men and women get older findings indicated less concerned about the social aspects of body image than younger generations (Davison and McCabe 2005). Therefore, this study indicated that the importance of considering multiple measures of body image associated with different aspects of psychological, social, and sexual functioning by investigating the role of body image in women and men throughout adulthood. This study determined which aspects of body image were most predictive factors of psychological, social, and sexual functioning. These results demonstrate that social aspects of body image emerge and are important in delineating a better understanding of psychological functioning in obesity.

Negative body image not only affects day-to-day functioning, but can also lead to eating disorders. Caradas et al. (2001) examined whether there are differences between eating attitudes and body shape concerns in cultures outside the United States. This study examined concerns among adolescent South African schoolgirls. A survey, including a 26-item version (Garner et al., 1982) of the Eating Attitudes Test, a 34-item Body Shape Questionnaire developed by Cooper et al. (1987b) and a Body Silhouette Chart created by Bell et al. (1986), was administered to 228 South African school girls between 15 and 18 years of age. The sample consisted of 60 African, 83 mixed and 85 White girls. Results showed that African girls had higher BMI values compared to the other two groups, while Whites were most concerned about their body image as indicated by a high score on the Body Shape Questionnaire ($p<0.01$). Furthermore, Whites had a significantly higher body image dissatisfaction than African or mixed race groups ($p<0.001$). However, there were no ethnic differences in Eating Attitude Scores. That is, all ethnic groups exhibited equal risk for the development of an eating disorder. Overall, White school girls demonstrated higher concerns about their body image than African or mixed race girls which implies that they have a smaller ideal body size than other groups (Caradas, Lambert, and Charlton 2001). Findings from Caradas et al. support previous studies in those differences in obesity are associated with differences in perception of body image among diverse ethnic groups, and theses different perceptions of body image affect weight changes and views of weight control.

Body satisfaction

Socioeconimic factors are considered important in the etiology of weight concerns and unhealthy weight control behaviors. Abell and Richards (1996) examined the relationship between body shape satisfaction and self-esteem based on socioeconomic status. Forty males and forty-three females who were undergraduate students in an urban, Roman Catholic university participated in this study. Participants completed the questionnaire examining self-esteem, body image, socioeconomic status and religious beliefs. Results from this study indicated that males were surprisingly more dissatisfied with their body shape than females because they wanted to be more muscular. In addition, there was a significant relationship between body image ($p<0.001$) and self-esteem ($p<0.01$) in both males and females. Furthermore, females who described themselves as religious were significantly heavier than their ideal weight (for real weight $r=0.38$, $p<0.01$; for ideal weight $r=0.45$, $p<0.001$). A stronger positive relationship between body satisfaction and self-esteem was noted among upper class than lower class women ($r=.37$, $p<0.05$) (Abell and Richards 1996). Overall, Abell and Richards concluded that socioeconomic status may influence body satisfaction.

Another study from Caldwell et al. (1997) provides somewhat contrastory results to that of Abell and Richards. Researchers examined the relationship between body image and body satisfaction among upper class women. They investigated whether reported differences in body image could be attributed to self-esteem and body dissatisfaction. Participants between 21 to 65 years old completed a survey disseminated

in a Consumer Reports magazine. The final sample size was 183 African Americans and 7,200 Whites. Body weight categories were divided into 5 groups based on BMI classification: underweight (BMI<20), normal (20<BMI<25), borderline (25<BMI<27), overweight (27<BMI<30), and obese (BMI>30). Self-esteem was measured using the Rosenberg Self-Esteem Scale and body satisfaction was measured using Stunkard's (1986) nine silhouettes. White women in this study had a higher income-level than African American women and significantly fewer African American women were married than the White women (p=0.000). In addition, African American women had a significantly higher BMI than the White women (p=0.001). However, after controlling for income level and marital status, there were no significant differences between the two groups. Moreover, there were no significant differences in body dissatisfaction, self-esteem and weight/size discrepancy after using hierarchical multiple regressions. On the other hand, White women (21%) were more affected by body dissatisfaction when analyzed by BMI status than African American women (11%), which implies that White women are more concerned with thin body image than African American women (Caldwell, Brownell, and Wilfley 1997). While Abell and Richards found that socioeconomic status influences body satisfaction, Caldwell et al. found that ethnicity is more influential.

Previous studies have documented that non-White ethnic groups prefer heavier body image ideals than Whites, and African Americans are less likely to have eating disorders. Therefore, Abood and Mason (1997) investigated differences between

White Americans and African Americans in terms of eating attitudes and body dissatisfaction. Researchers used a questionnaire based on the Eating Attitudes Test (EAT-26), which is from "A multidimensional psychotherapy for anorexia nervosa" (Garner, Garfinkel and Bemis, 1982) and Body Dissatisfaction Subscale (BDS) which is from "Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia" (Garner, Garfinkel, and Polivy 1983). The survey included questions regarding eating disorders and factors which influence one's motivation to exercise for changing one's weight. A t-test was used to identify differences in age, height and weight and Chi-square to detect differences in frequency distribution of eating attitudes and behaviors for statistical analyses. The diet subscale results indicated that Whites (n=373) were more concerned about their body weight, more vulnerable to eating disorders and they attempt to burn calories more often. Moreover, the issue of being overweight was more predominant among Whites than other ethnicities, excluding African Americans. Whites mean body weight was less than African Americans in this study. Both African Americans and Whites reported using pills such as laxatives for losing weight. Overall, reports indicates that Whites have a greater desire to change their body weight than African Americans and the desire to change body weight may be attributed to cultural differences (Abood and Mason 1997).

Several studies investigated whether racial differences exist in self-image and overweight among adolescent girls. Neumark-Sztainer et al. (1999) examined the differences of self-image and overweight in African American and White adolescent girls

with the intent of having a better understanding of how they view themselves and their place in society. This study was conducted with 50 adolescent high school girls whose ages were between 14 to 20 years in St. Paul, MN. Individual interviews were conducted using questions to explore self-perceptions. Interviews were taped and transcripts were coded to determine whether their responses to individual questions were positive or negative. The results were divided into 7 categories: general description of self; weight-specific self-perception; non weight related self-perceptions; situations in which one feels self-conscious; perceptions of ideal self; and weight as an issue. Results indicated that African American girls were less focused on their weight than White girls and more likely to have higher satisfaction with their body. However, the majority of both African American girls and White girls expressed negatively views concerning body image and shape. Furthermore, both ethnic groups indicated positive and negative non-weight-related self-perceptions. The positive self-perceptions were manifested by smiling, overall appearances and being pretty, while the negative self-perceptions were shown through low self-esteem, difficulties in social interactions and health concerns. In addition, both African American and White girls talked about feelings of self-consciousness while being around thin people and wearing certain clothes which reveal their body. Overall, adolescents are surrounded by a thin-oriented world. Therefore, they have concerns regarding their weight and feelings of negativity about their body image, even though most of the girls had some positive perceptions of their lives (Neumark-Sztainer et al. 1999).

Another study from French et al. (1997) suggests that dieting and unhealthy weight control behaviors are correlated with negative psychosocial variables. This research examined ethnic differences in terms of disordered dieting behavior in a population-based sample of adolescent females. Data was collected from 36,320 public school students in the state of Minnesota. Students completed a questionnaire including information about how often they go on a diet, how frequently they purge their body image, psychosocial variables, sexual abuse and health compromising behaviors. The results indicated that Hispanics (23.6%) most frequently dieted followed by Whites (21.5%), American Indians (20.6%), and Asians (17.4). Asians (33.6%) were more likely to have binge eating behaviors than other ethnic groups. Binge eating was common with people who thought they were overweight or had low body satisfaction except in Hispanics. Hispanics (25%) had the highest prevalence of purging as compared to other ethnic groups. There was a strong correlation between dieting, purging, binge eating, and poor body image among every ethnic group (French et al. 1997). Even though, this study did not include African Americans, the results indicated that non-White ethnic groups were more likely to have unhealthy weight control behaviors contradictory to popular belief.

Pesa and Lori (1999) examined racial differences in weight-loss among White American, African American, Hispanic American, Native American, and Asian American female adolescents. This study used data collected from the National Longitudinal Study of Adolescent Health (Add Health). A total of 200 adolescents

participated in this research from 80 schools. This study's methods included interviews and questionnaires. Height and weight were self-reported, and questions were asked about weight-loss behaviors such as taking diet pills and exercising. Chi-square analyses were used to determine whether attempts to lose weight were different among ethnic groups. The results indicated that Asian Americans have the lowest percentage (11%) of overweight and Native Americans (30%) have the highest. Only 19% of African Americans used both diet and exercise to lose weight. The reported use of other methods, such as taking diet pills was reported less frequently in African American than other groups. In this study, Hispanic American, White American and Asian American adolescent females showed higher attempts to lose weight than African Americans, but among non African Americans, there were no differences in levels of attempting to lose weight. However, White Americans showed higher attempts to lose weight than African Americans (Pesa and Lori 1999). Overall, previous research indicates that African Americans have higher body weights, are more likely to be satisfied with their body weight, and tend not to try to lose weight.

CHAPTER III

METHODOLOGY

Description of study sample

A representative sample of individuals 30-44 years of age who received food stamp benefits from November 2005 to January 2006 were recruited using the list provided by the Oklahoma Department of Human Services (OKDHS). At total of 1,600 people were included on the OKDHS list. From the original 1,600 people, 671 were eliminated due to being deceased (n=1), not having a correct (n=240) or working phone number (n=425), and not being qualified (n=5). An additional 6 people were eliminated due to physical/language problems and not being able to contact them. From the remaining number, 62 refused to participate. Therefore, our sample size was 400 participants, 100 from each racial/ethnic group, namely White, African American, Native American and Hispanic.

Recruitment and consent procedure

Participants were randomly selected from the list of Food Stamp recipients provided by OKDHS. Participants were informed of the opportunity to participate in the study 2 weeks prior to the telephone survey via a pre-notification letter (Appendix A). Researchers sent pre-notification letters in the middle of February and the survey began in early March. To encourage participation, each participant who completed the survey which lasted approximately 35 minutes was mailed a check in the amount of $20.00.

The study was approved by the Institutional Review Board of the Oklahoma State University (Appendix D).

Survey design

The survey was designed to examine racial and ethnic differences in factors influencing body weight including perceptions of body image, body satisfaction, food security, ethnic identity, discrimination, and stress. A Random Digit Dial survey (Appendix B) was administered to approximately 400 food stamp recipients in the state of Oklahoma to explore the impact of various social and psychological factors on body weight. The Bureau of Social Research conducted the survey and trained individuals how to conduct the survey. There were no follow up procedures for participants in this study.

Height and body weight were self-reported and BMI was calculated using quintelet's index, weight kg/ height m^2. The reliability and validity of weight and height from self reports has been established by Stewart (Stewart 1982). Underweight was defined as a BMI < 18.5 kg/m^2. Normal weight was defined as an 18.5 $kg/m^2 \leq$ BMI< 24.9 kg/m^2, and overweight was defined as a 25 $kg/m^2 \leq$ BMI < 29.9 kg/m^2. Obesity was identified by a BMI $\geq$ 30kg/m^2 and morbid obesity was identified by a BMI $\geq$ 40 kg/m^2.

To measure body satisfaction, 8 of the 10 questions from the Body image and Body Change Questionnaire (Ricciardelli & McCabe, 2001), including Body Image Satisfaction and Body Image Importance on a survey, were used in this study. Three questions asked about weight, body shape, and muscle size. An example of a body image satisfaction question is "How satisfied are you with your WEIGHT?" Participants responded using a 5-point Likert scale from 1 to 5, with 1 being "extremely dissatisfied"

to with 5 being “extremely satisfied”. A body satisfaction score was created and scores ranged from 3 to 15. A high score indicates a high level of body satisfaction and a low score indicates a low level of body satisfaction. An example of a body image importance question is “How important to you is the SIZE OF YOUR MUSCLES, compared to other things in your life?” Participants responded using a 5-point Likert scale from 1 to 5, with 1 being “extremely unimportant” to with 5 being “extremely important”. A body image importance score was created and scores ranged from 5 to 25. A high score indicates a high level satisfaction with a rating of appearance as highly important and a low score indicates a low level satisfaction with a rating of appearance as highly important.

We used items from the Body Image Avoidance Questionnaire (Rosen et al. 1991), and the Attention to Body Shape Scale (Beebe 1995) to create a body image behavior scale and The Physical attractiveness scale to create a physical attractiveness scale. The Body Image Behavior Scales items consist of 8 items from the Body Image Avoidance Questionnaire and the Attention to Body Shape Scale, and the Physical attractiveness scales items consist of 3 items from the Physical Attractiveness Scale. An example of body image avoidance question is “You avoid shopping for clothes because you do not want to focus on your body” and an example of question of the attention to body shape scale is “You exercise in order to get a better body”. Participants responded to a 6-point Likert scale from 1 to 6, with 1 meaning “never” to with 6 meaning “always”. Scores on the body concealment and body improvement ranged from 8 to 48. A high score indicated more of an attempt to conceal the body or improve the body and a low score indicates less of an attempt to conceal the body or improve the body. An example question of the physical attractiveness scale, which measures how attractive they

perceived themselves, is “Members of the opposite sex usually think that I am…” Participants responded with a 3-point Likert scale from 1 to 3, with 1 being “extremely unattractive” to with 3 being “extremely attractive”. Scores range from 3 to 9; a high score indicate a high self-rating of attractiveness and a low score indicate a low self-rating of attractiveness.

The 6-item U.S Food Security Survey Module (2002) was used to identify level of food security. Several studies have used the short form and resulted in the same outcome as the original longer Food Security Scale which included 18 items. A study from Furness et al. (2004) used the 6-item short form of the U.S. Households Food Security Scale to identify factors of food insecurity among low income households in Los Angeles County using a telephone survey. Findings from this study were consistent with previous studies and indicated an inverse relationship between food insecurity and household income (Furness et al. 2004). Blumberg et al. (1999) also examined the validity and effectiveness of the 6-item short form of the U.S. Households Food security Scale. Results from this study indicated that the short form correctly identified 97.7% of all households’ food insecurity status, including 95.6% of households with children and 99% of households with no children (Blumberg et al. 1999). Because of the length of our survey and the noted validity of the shortened food security questionnaire, our survey included the 6-item scale instead of the 18-item or 10-item scales in order to decrease the burden on participants while still providing reliability. Individuals with a total score of 11-12 were classified as “Food-secure”, those having a score of 9-10 were classified as “Food-secure, at risk”. Individuals with a total score of 7-8 were classified as “Food-insecure without hunger”, and those having a score of 5-6 were classified as “Food-

insecure, moderate hunger". For our study, we developed a food security score for the scale to indicate level of food security. Scores ranged from 5 to 12; a high score indicates a lesser degree of food insecurity, and a low score indicates a greater degree of food insecurity.

We measured how well each set of items in each scale measured a specific construct and calculated the Cronbach's alpha coefficient as a means of measuring internal consistency reliability for each scale used in this study because we did not include all items from original scales. "Cronbach's alph is the average value of the coefficients from all possible combinations of split halves"(Hair et al. 2003). Cronbach's alpha values are used to measure the internal consistency of a scale, and the extent that questions in a survey relate to each other. Cronbach's alpha reliability coefficient ranged from 0 to 1. Internal consistency is considered better as Cronbach values approach 1.0. The minimum recommendation for internal consistency in social science research has been set at 0.7 (Kline 1993). However, acceptable Cronbach's alpha ranges have been reported from as low as 0.55 and have been considered being acceptable by Truconi et al. & Metcalf et al (Truconi et al. 2003; Metcalf et al. 2003). These scales have demonstrated a high level of internal consistency and satisfactory test-retest reliability and have been validated using both exploratory and confirmatory factor analysis.

Data Analysis

The data were entered into the Statistical Package for the Social Sciences (SPSS) 16.0 for Windows. Descriptive statistics were calculated to summarize characteristics of the population including age, marriage status, education level, ethnicity, employment,

monthly income, and BMI. This study presented 9 hypotheses including a null hypothesis and alternative hypothesis for each variable of interest namely body image satisfaction scores, body image importance score, body image behavior scores, positive self-esteem scores, negative self-esteem scores, food security scores, discrimination scores, ethnic identity scores and BMI.

In order to test the null hypothesis that there were no significant differences in means of body satisfaction scores, body image behavior scores, food security scores, and BMI among different racial groups, we utilized the ANOVA to compare group means by analyzing comparisons of variance estimates. ANOVA was used because more than two independent variables were included. For this study, the independent variables were categorical variables including each racial group. Dependent variables were continuous variables including body satisfaction scores, body image behavior scores, food security scores, and BMI.

Due to lack of evidence where the difference lies using the ANOVA, this study utilized Post-hoc analysis which compared each group mean with each other group mean. Tukey's test was used because the sample size was the similar among different racial groups. Following ANOVA, Tukey's post- hoc test results were examined which racial groups were significantly different in terms of mean body satisfaction score, body image behavior scores, food security scores, and BMI. A P value ≤ 0.05 was considered statistically significant.

Following ANOVA procedures described above using, race as the independent variable, the researchers decided to conduct additional ANOVA tests using Food security

category and BMI category as independent variables. The test procedures for each followed what described that race was identified as the independent variable.

	Body satisfaction Scale (Q 1-9)		Body image behavior Scale (Q 10-20)		Rosenberg scale (Q 21-30)
Scale Component	Body Image Satisfaction	Body image importance	Body concealment and Body improvement	Physical attractiveness scale (Includes questions 18-20) (Includes questions 10-17)	Self-esteem
# of questions	3	5	8	3	10
Response options	Extremely dissatisfied Fairly dissatisfied Neutral Fairly satisfied Extremely satisfied	Extremely unimportant Fairly unimportant Neutral Fairly important Extremely important	Never Rarely Sometimes Often Usually Always	Extremely unattractive Of average attractive Extremely attractive	Strongly disagree Disagree Agree Strongly agree
Score Range	3-15	5-25	8-48	3-9	10-40
Interpretation of score	A low score= a low level of satisfaction with the body A high score = a high level of satisfaction with the body	A low score= a low level of satisfaction with a rating of appearance as highly important A high score = a high level of satisfaction with a rating of appearance as highly important	A low score= a less of an attempt to conceal the body or improve the body A high score= a more of attempt to conceal the body or improve the body	A low score= a low self-rating of attractiveness A high score= a high self-rating of attractiveness	A low score= a low self-esteem A high score= a high self-esteem
Reference	(Ricciardelli and McCabe 2001)		(Rosen et al. 1991) (Beebe 1995) (Davison and McCabe 2005)		(Rosenberg 1965)

	Food security scale (Q31- Q36)		**Discrimination (Q37- Q48)**	**Ethnic identity (J1-J7)**
Scale Component	Food insecurity		Discrimination	Ethnicity
# of questions	3	2	12	7
Response options	Yes No	Often true Sometimes true Never true	Four or more times Two of three times Once Never	Strongly dis agree Disagree Agree Strongly agree
Score Range		5-12	12-48	7-28
Interpretation of score	A low score= a greater degree of food insecurity A high score= a lesser degree of food insecurity		A low score= Often experience discrimination A high score= Seldom experience discrimination	A low score= A low degree of ethnic identity A high score= A greater degree of ethnic identity
Reference	(USDA , 2002)		(Noh and Kaspar 2003)	(Phinney 1992)

CHAPTER IV

FINDINGS

A total of 400 participants completed the telephone survey which included 100 individuals from each racial/ethnic group of interest, namely White, African American, Native American and Hispanic. Table 1 summarizes the characteristics of the survey sample population. The majority of survey participants were 35 to 44 years of age with a mean age of 36.69 years (SD 5.270 years, range 18-69 years). Almost 80% of the participants in the sample were female, most of who were not married. Furthermore, for all racial groups the highest educational level completed was most commonly that of high school. Nearly 85% of participants reported that they have no health insurance and over 50% were unemployed among White, Hispanic, and Native American racial groups. African Americans less frequently reported being unemployed with 46% indicating unemployment status. Over 2/3 of households reported annual incomes as less than $20,000. Even though African Americans had a higher level of employment (54%) than other racial groups, more African Americans were classified as low income (83%) and more lived in rental house (82%) versus owned whereas approximately 50% of other racial groups of interest lived in rental houses. Table 1 also shows that Whites had the highest proportion of normal weight (5.1%) and underweight (32.3%) individuals while there was the highest level of obesity in African American (37%). Furthermore, Hispanics had the highest level of overweight (34 %), followed by Native American (28.3%), African American (28%), and White (22.2%). However, the mean BMI was similar across all groups.

Table 1. Characteristics of the sample population (N=400).

	African American n=100		Hispanic n=100		Native American n=100		White n=100	
	n	%	n	%	n	%	n	%
Age								
25-34	36	36.4	31	31.3	42	42.0	37	37.8
35-44	58	58.6	65	65.7	58	58.0	59	60.2
45-54	4	4.0	3	3.0			1	1.0
55-64	1	1.0					1	1.0
Gender								
Male	20	20	22	22.0	20	20.0	26	26.0
Female	80	80	78	78.0	80	80.0	74	74.0
Marital status								
Married	25	25	43	43.0	36	36.0	39	39.0
Never married	40	40	19	19.0	22	22.0	19	19.0
Divorced	20	20	28	28.0	24	24.0	33	33.0
Widowed	1	1	1	1.0	3	3.0	1	1.0
Separated	14	14	9	9.0	15	15.0	8	8.0
Education level								
Less than 9th grade	1	1	15	15.0	2	2.0	2	2.0
9th to 12th grade, no diploma	15	15	27	27.0	21	21.0	15	15.0
High school graduate (includes equivalency)	45	45	31	31.0	44	44.0	34	34.0
Some college, no degree	26	26	20	20.0	31	31.0	32	32.0
Associate degree	7	7	4	4.0			6	6.0
Bachelor's degree (BA, BS)	4	4	3	3.0			10	10.0
Graduate or professional degree	1	1			1	1.0		
Other - specify:	1	1			1	1.0	1	1.0
Health insurance								
Yes	29	29	14	14.1	15	15.0	14	14.0
No	71	71	85	85.9	85	85.0	86	86.0
Job status								
Yes	54	54.0	39	39.0	49	49.0	37	37
Full-time	39	72.2	26	66.7	30	61.2	24	64.9
Part-time	15	27.8	13	33.3	19	38.8	13	35.1
No	46	46.0	61	61.0	51	51.0	63	63
Retired	3	6.5	1	1.6	1	2.0	3	4.8
Unemployed	14	30.4	12	19.7	12	23.5	14	22.6
A student	8	17.4	9	14.8	4	7.8	5	8.1
A homemaker	10	21.7	30	49.2	23	45.1	19	30.6
Disabled	11	23.9	9	14.8	11	21.6	21	33.9
Type of home ownership								
Own	15	15	36	36.0	30	30.0	36	36.0
Rent	82	82	55	55.0	56	56.0	54	54.0
Other - specify:			3	3.0	4	4.0	2	2.0
Live with parents/children/other relatives	3	3	6	6.0	10	10.0	8	8.0
Total household income								
$20,000 or more	14	14.4	22	23.2	22	22.4	22	23.2
Less than $20,000	83	85.6	73	76.8	76	77.6	73	76.8
BMI category								
Underweight	1	1					5	5.1
Normal weight	21	21	20	20.6	22	22.2	32	32.3
Overweight	28	28	34	35.1	28	28.3	22	22.2
Obesity	37	37	31	32.0	32	32.3	32	32.3
Morbid obesity	13	13	12	12.4	17	17.2	8	8.1
Food security category								
Food insecure moderate hunger	13	13.0	8	8.0	12	12.0	17	17.0
Food insecure without hunger	18	18.0	24	24.0	18	18.0	17	17.0
Food secure at risk	25	25.0	32	32.0	29	29.0	28	28.0
Food secure	44	44.0	36	36.0	41	41.0	37	37.0

Additional characteristics of the sample population are presented in Table 2. Hispanics had more people residing in a household (4.56) and the largest number under individuals 18 years living in the home (2.63). Of all ethnic groups, Whites showed the lowest level of BMI (29.02), followed by Hispanics (20.87), African Americans (31.44), and Native Americans (31.53), but these differences in BMI were not significant.

Table 2. Additional Characteristics of the sample population (N=400)

	African American			Hispanic			Native American			White		
	n	Mean	S.D	n	Mean	S.D	n	Mean	S.D	n	Mean	S.D
Household size	100	3.44	1.42	99	4.56	1.92	100	3.93	1.74	100	3.69	1.66
# of people under 18	87	2.08	1.21	96	2.63	1.63	94	2.29	1.66	90	1.98	1.39
# of people earning income	99	1.25	0.52	97	1.24	0.45	98	1.36	0.70	99	1.32	0.51
BMI	100	31.44	8.18	97	30.87	7.09	99	31.53	8.17	99	29.02	8.65
Age	100	37.06	5.50	100	36.20	4.74	100	36.16	4.32	100	37.34	6.26

Table 3 depicts the internal consistency of each scale using the Cronbach's alpha procedure. The internal consistency of each section was high: Cronbach's alpha values ranged from 0.743 for the body image behavior scale to 0.905 for the ethnic identity scale. As such, we surmised that each scale used in the survey evoked, consistent and reliable responses and proceeded with analysis of variance comparisons.

Table 3. Internal consistency of scales utilized in the survey.

		# of items	Cronbach's alpha
Body satisfaction	Body image satisfaction scale	3	0.793
	Body image importance scale	5	0.799
Body image	Body image behavior scale	8	0.743
	Physical attractiveness scale	3	0.824
Self-esteem	Rosenberg scale (positive)	5	0.786
	Rosenberg scale (negative)	5	0.834
Food security	Food security scale	5	0.794
Discrimination	Discrimination scale	12	0.783
Ethnicity	Ethnic identity scale	7	0.905

The use of ANOVA presupposes that populations are independent and normally distributed. We assumed that the sample was independent because participants in this study were randomly selected from the list of Food Stamp recipients provided by OKDHS. We also assumed that the population was normally distributed by examination of histograms and because the population sample was relatively large and included 100 in each ethnic group.

An additional assumption required for the appropriate use of ANOVA is that the variances are homogeneous. We tested homogeneity of variances using Levene's test. The Levene's test statistic is used to examine the probability that at least one of the samples has a significantly different variance than the others. If the p value was less than 0.05, we assumed that the variances are significantly different and not homogeneous. Results from Leven's test (Table 4, 5, 6) indicated that the variance for the negative self-esteem scale, the discrimination scale, and the ethnic identity scale were not homogeneous. As such, we used the Games-Howell statistic to compare groups for these

scales because it is an appropriate test to use when the variances are unequal or when variances and group sizes are unequal.

Table 4 presents the results of ANOVA where body image satisfaction scores, body image behavior scores, positive and negative self-esteem scores, food security scores, discrimination scores, ethnic identity scores, and BMI were included as dependent variables and racial/ethnic group was identified as the independent variable. As shown in Table 4, there were no significant differences by race for body satisfaction scores, body image behavior scores, positive self-esteem scores, food security scores, discrimination scores, neither ethnic identity scores nor BMI values ($p > 0.05$). However, significant differences were found for the subscale for body image importance ($p< 0.05$). Significant differences in negative self-esteem by race/ethnicity were also evident ($p < 0.05$). Mean ± SD of negative self-esteem was 10.94 ± 3.47, 10.45± 2.71, 10.4± 2.95, and 9.30 ± 2.81 for Whites, Native Americans, Hispanics, and African Americans respectively. African Americans had a significantly lower score on negative self-esteem than the other racial/ethnic groups ($p< 0.05$).

Results from Tukey's post hoc multiple comparisons test indicated that Hispanics (17.08±4.40) had significantly higher score on body image importance than Native Americans (15.34±4.87, $p < 0.05$). Using the Games-Howell statistic to compare groups for negative self-esteem scale, discrimination scale, ethnic identity scale, and BMI which were not homogeneous, results indicated that there was only a significant difference in negative self-esteem (Appendix C). Whites (10.94±3.47), Hispanics (10.45±2.71), and Native American (10.45±2.71) had significantly higher score on negative self-esteem than African Americans (9.90±2.81, $p < 0.05$).

Table 4. Factors influencing body weight according to racial/ethnic group.

	African American N=100		Hispanic N=100		Native American N-=100		White N=100			
	Mean (n)	SD	Mean (n)	SD	Mean (n)	SD	Mean (n)	SD	F	p-value
Body image satisfaction	9.42	3.54	9.15	3.14	8.16	3.10	8.89	2.98	1.17	0.318
0.07*	(100)		(95)		(100)		(99)			
Body image importance	16.63	4.96	17.08	4.40	15.34	4.87	15.38	4.50	3.49	0.016
0.19*	(99)		(100)		(99)		(98)			
Body image behavior	23.94	8.96	22.41	7.30	22.84	8.26	21.62	8.13	1.37	0.249
0.11*	(100)		(95)		(100)		(99)			
Positive self-esteem	16.42	2.32	16.17	2.21	15.74	2.45	15.93	2.71	1.43	0.231
0.32*	(100)		(96)		(99)		(100)			
Negative self-esteem	9.30	2.81	10.44	2.95	10.45	2.71	10.94	3.47	5.32	0.001
0.02*	(99)		(99)		(97)		(99)			
Food security	9.57	2.19	9.53	1.96	9.52	2.25	9.26	2.35	0.40	0.749
0.17*	(100)		(100)		(100)		(99)			
Discrimination	38.71	6.81	39.65	6.22	38.48	7.24	40.55	5.64	2.11	0.097
0.01*	(100)		(100)		(100)		(100)			
Ethnic identity	23.7	3.53	22.91	3.35	23.39	3.34	22.67	2.98	1.84	0.139
0.02*	(100)		(95)		(93)		(88)			
BMI	30.89	7.29	29.70	5.56	31.11	7.70	28.64	7.81	2.47	0.061
0.03*	(98)		(91)		(97)		(98)			

*Levene's test statistic for homogeneity of variance

Because few differences were noted when the scores from each scale were analyzed using racial/ethnic group as the independent variable, ANOVA was conducted for each of the scales using BMI category as the independent variable. Means and standard deviations for each scale by 5 different BMI categories are presented in Table 5. Only 5 individuals were classified as underweight. This group was excluded from discussion of ANOVA results because it did not meet the assumption of normality. Post

hoc tests were used to ascertain significant difference in variables of interest. There were significant differences in body image satisfaction scores, body image behavior scores, positive self-esteem scores, food security scores, and discrimination scores among 5 different BMI categories ($p< 0.05$). The morbid obesity group scored significantly lower on body image satisfaction scale (6.68 ±3.07), followed obesity groups (8.15±2.93), overweight (9.71±2.82) and normal weight groups (10.65±2.77, $p<0.05$). Individuals from the morbid obesity, obesity, and overweight groups were more likely to have a higher score on body image behavior than those from the normal weight category ($p<0.05$). In addition, the morbid obesity groups revealed the lowest scores on positive self-esteem scale (15.44 ± 2.90, $p <.05$), followed by the obesity groups (15.66±2.38), the overweight groups (16.40±2.20), and the normal weight groups (16.53±2.22). Furthermore, individuals from the morbid obesity group experienced more food insecurity and discrimination than those from the normal weight and overweight groups ($p<0.05$).

An examination of difference using Tukey's post hoc comparison (Appendix C) revealed that participants from the normal weight group had the highest self-esteem scores (16.53±2.22) followed by the overweight group (16.4±2.20), obesity group (15.66±2.38) and morbid obesity group (15.44±2.90). In addition, food insecurity status was significantly higher among the morbid obesity group (8.55± 2.30, $p < 0.05$) than normal weight and overweight groups. Mean ± SD of discrimination from normal weight (40.72±6.53) and overweight (40.94 ±5.57) was significantly higher than the obese (38.39±6.40) and morbidly obese groups (36.16±6.63, $p< 0.05$).

Table 5. Factors influencing body weight according to BMI category.

	Normal weight N=95		Overweight N=112		Obesity N=132		Morbid obesity N=50			
	Mean (n)	SD	Mean (n)	SD	Mean (n)	SD	Mean (n)	SD	F	p-value
Body image satisfaction	10.65	2.77	9.71	2.82	8.15	2.93	6.68	3.07	23.34	0.000**
0.74*	(95)		(112)		(132)		(50)			
Body image importance	15.75	4.71	15.64	4.78	16.51	4.40	17	5.22	1.44	0.230
0.38*	(95)		(110)		(132)		(49)			
Body image behavior	19.86	7.73	22.93	7.87	23.85	8.52	25.58	8.24	6.81	0.000**
0.65*	(94)		(110)		(132)		(50)			
Positive self-esteem	16.53	2.22	16.4	2.20	15.66	2.38	15.44	2.90	4.31	0.005
0.04*	(93)		(110)		(131)		(49)			
Negative self-esteem	9.98	2.90	10.08	3.00	10.66	3.23	10.70	3.21	1.378	0.249
0.67*	(93)		(111)		(132)		(50)			
Food security	9.64	2.04	9.85	2.02	9.37	2.26	8.55	2.30	4.49	0.004
0.20*	(95)		(112)		(132)		(49)			
Discrimination	40.72	6.53	40.94	5.57	38.39	6.40	36.16	6.63	9.30	0.000**
0.07*	(95)		(110)		(132)		(50)			
Ethnic identity	22.68	3.07	23.43	3.19	23.47	3.55	22.73	3.49	1.45	0.226
0.16*	(85)		(107)		(125)		(49)			

*Levene's test statistic for homogeneity of variance, ** $p < 0.0001$

ANOVA was also carried out to examine differences using food security status as the independent variable. As shown in Table 6 participants from food secure and food secure at risk groups reported a higher body image satisfaction than those from the food insecure without hunger and the food insecure with moderate hunger groups ($p < 0.05$). Furthermore, Tukey's test (Appendix C) indicated that participants from the food insecure without hunger group (17.43±4.63) had significantly higher scores for body image importance than those from the food secure group (15.39±4.56, $p < 0.05$). Significant differences in body image behaviors according to food security status were also evident ($p < 0.05$). Participants from the food insecure with moderate hunger groups scored significantly higher on the body image behavior scale than those from the food

secure at risk, and the food secure groups ($p < 0.05$). The Games-Howell statistic indicated that participants from food secure at risk groups and food secure groups had a significantly higher score on positive self-esteem and a lower score on negative self-esteem than those from food insecure with moderate hunger groups ($p < 0.05$). Participants from the food secure and food secure at risk groups were more likely to have higher scores on positive self-esteem than those from the food insecure without hunger groups and food insecure with moderate hunger groups while participants from the food insecure with moderate hunger and food insecure without hunger groups were more likely to have higher scores on negative self-esteem than others. The differences in discrimination score among different food security status were significant according to the Games-Howell ($p<0.05$). The mean score of discrimination was the highest in participants from the food secure group (42.28±5.16), followed by food secure at risk group (39.80±5.83), food insecure without hunger group (36.70±6.47), food insecure with moderate hunger group (35.24±6.20). In addition, a significantly different score for the mean BMI by food security status was found among food insecure with moderate hunger groups, food insecure without hunger groups and food secure groups ($p < 0.05$).

Table 6. Factors influencing body weight according to food security status.

	Food secure N=158		Food secure, at risk N=114		Food insecure without hunger N=77		Food insecure moderate hunger N=50			
	Mean (n)	SD	Mean (n)	SD	Mean (n)	SD	Mean (n)	SD	F	p-value
Body image satisfaction	9.76	3.02	8.95	3.00	8.64	3.27	7.48	3.39	7.45	0.000**
0.61*	(158)		(114)		(77)		(47)			
Body image importance	15.39	4.56	15.80	4.75	17.43	4.63	17.28	4.71	4.46	0.004
0.94*	(156)		(113)		(76)		(49)			
Body image behavior	21.25	8.36	22.45	8.39	24.77	7.53	25.92	8.36	5.76	0.001
0.74*	(158)		(113)		(75)		(50)			
Positive self-esteem	16.66	2.36	16.22	2.09	15.56	2.28	14.65	2.92	10.55	0.000**
0.01*	(157)		(112)		(76)		(49)			
Negative self-esteem	9.33	2.73	9.98	2.59	11.16	3.13	12.56	3.48	18.89	0.000**
0.02*	(157)		(109)		(77)		(50)			
Discrimination	42.28	5.16	39.80	5.83	36.70	6.47	35.24	6.20	27.20	0.000**
0.02*	(154)		(112)		(77)		(50)			
Ethnic identity	23.42	3.38	22.89	3.09	23.54	3.11	22.27	4.17	1.97	0.118
0.05*	(148)		(106)		(75)		(48)			
BMI	28.64	6.13	29.94	6.38	31.76	8.14	33.13	9.56	6.43	0.000**
0.00*	(153)		(110)		(74)		(49)			

*Levene's test statistic for homogeneity of variance, **p<0.0001

In summary more significant differences were found when the data was analyzed using food security status as the independent variable than using BMI category or racial category as independent variables. There were fewest differences noted when data was analyzed using race as the independent variable.

CHAPTER V

CONCLUSION

Summary

The purpose of this study was to gain a better understanding of social and cultural factors which influence body weight in individuals who receive food stamps in Oklahoma where disparities in overweight and obesity are prevalent. This study compared the body image satisfaction, body image importance, body image behavior, positive self-esteem, negative self-esteem, food security status, discrimination, ethnic identity, and BMI as these factors were indentified from a review of literature as important influencing body weight.

Many of the previous studies have found a strong positive relationship between food insecurity status and increased risk of overweight and previous studies have also indicated that there are disparities in the prevalence of obesity among diverse ethnic groups, predominantly among individuals classified as minority status. Recent studies revealed that perceptual differences in body image and self-esteem reportedly impact overweight status. However, little research has been conducted with limited resource populations to examine factors, including body image, self-esteem, discrimination and ethnic identity, food security status, BMI level influencing overweight.

The results from the current study indicate that few difference in factors influencing body weight were evident among racial/ethnic groups. A review of the study hypotheses follows.

Hypothesis

1. Null hypothesis #1 stated that "There is no significant difference in the level of body image satisfaction among diverse ethnic groups receiving food stamps in Oklahoma". The researchers fail to reject Null hypothesis 1 because results from ANOVA for this variable reveal p=0.318.
2. Null hypothesis #2 stated that "There is no significant difference in the score of body image importance among diverse ethnic groups receiving food stamps in Oklahoma". There was a significant difference in the score of body image importance among diverse ethnic groups receiving food stamps in Oklahoma (p=0.016). Therefore, the researcher rejects Null hypothesis 2 in favor of the alternate hypothesis.
3. Null hypothesis #3 stated that "There is no significant difference in the score of body image behavior among diverse ethnic groups receiving food stamps in Oklahoma." The researchers fail to reject Null hypothesis 3 because results from ANOVA for this variable reveal p=0.249.

4. Null hypothesis #4 stated that “There is no significant difference in measure of positive self-esteem among diverse ethnic groups receiving food stamps in Oklahoma”. The researchers fail to reject Null hypothesis 4 because results from ANOVA for this variable reveal p=0.231.
5. Null hypothesis #5 stated that “There is no significant difference in measure of negative self-esteem among diverse ethnic groups receiving food stamps in Oklahoma”. There was significant difference in measure of negative self-esteem among diverse ethnic groups receiving food stamps in Oklahoma (p=0.001). Therefore, the researcher rejects Null hypothesis 5 in favor of the alternate hypothesis.
6. Null hypothesis #6 stated that “There is no significant difference in the rate of food insecurity among diverse ethnic groups receiving food stamps in Oklahoma”. The researchers fail to reject Null hypothesis 6 because results from ANOVA for this variable reveal p=0.749.
7. Null hypothesis #7 stated that “There is no significant difference in the score of the discrimination among diverse ethnic groups receiving food stamps in Oklahoma”. The researchers fail to reject Null hypothesis 7 because results from ANOVA for this variable reveal p=0.097.
8. Null hypothesis #8 stated that “There is no significant difference in the score of the ethnic identity among diverse ethnic groups receiving food stamps in

Oklahoma". The researchers fail to reject Null hypothesis 8 because results from ANOVA for this variable reveal p=0.139.

9. Null hypothesis #9 stated that "There is no significant difference in the Body Mass Index (BMI) among diverse ethnic groups receiving food stamps in Oklahoma". The researchers fail to reject Null hypothesis 9 because results from ANOVA for this variable reveal p=0.061.

Because analyses from the original design using racial/ethnic group as independent variable indicated few significant differences, the researchers chose to conduct additional analyses beyond that of the original hypotheses. Food security status and BMI category were used as independent variables to explore each factor which has an influence on body weight.

Conclusions

The current study revealed that most participants were classified as food secure at risk. Results from the current study were not as significant as previous studies from Miller et al. (2000), Simeon et al. (2003), and Caradas et al. (2000) which indicated that African Americans had a significantly higher score on body image satisfaction and higher positive self-esteem than other racial/ethnic groups. However, results from our study are consistent with previous studies in that African Americans scored slightly higher on body satisfaction and positive self-esteem than other racial groups. There were also no significant results from body image behavior scores, positive self-esteem scores, food security scores, discrimination scores, ethnic identity scores, and BMI by racial/ethnic groups. However, African Americans in our study had slightly higher level of BMI than other racial/ethnic groups which was similar to the results from Caldwell et al. (1995).

Body image importance scores varied among racial/ethnic groups in our study. Significant differences were found in body image importance scores among diverse ethnic groups with Hispanics and African Americans scoring significantly higher on body image importance than Whites and Native Americans ($p=0.01$). Significant differences in negative self-esteem among diverse racial/ethnic groups were also evident ($p=0.00$). Whites (10.94 ± 3.47) had significantly higher scores for negative self-esteem than African Americans (9.30 ± 2.81). These results support those of Pesa and Lori (1999), Caldwell et al. (1997), Abood and Mason. (1997), Simeon et al.(2003), Caradas et al.(2001), and Miller et al. (2000) that African Americans who have significantly higher body weights are more likely to be satisfied with their body weight and also exhibit higher scores on self-esteem regarding their weight. While results from Abood and Mason indicated that Whites have a greater desire to change their body weight than African Americans, results

from our study are not consistent with previous studies because African Americans had a greater desire to change their body weight than other racial groups according to our results. Even though we found results consistent with those of previous studies, we only had significant differences in body image importance scores, and negative self-esteem scores among diverse racial/ethnic groups.

Significant differences in body image satisfaction scores, body image behavior scores, positive self-esteem scores, food security scores, and discrimination scores by BMI categories were observed in our study. Participants classified as normal weight were more likely to be satisfied with their body image, and more likely to have a higher level of positive self-esteem than those from the obese and morbidly obese groups($p<0.05$). Furthermore, participants classified as obese experienced more food insecurity and discrimination than those from the overweight and normal weight groups. These findings support those of Townsend et al. (2001), Gibson (2006), Adams et al. (2003), VanEnwyk and Sabel (2003), Shariff and Khor (2005), Jones and Frongill (2006), and Olson et al. (2001) which indicate that the risk of obesity is significantly associated with food insecurity.

Looking at food security status, individuals from food insecure groups reportedly experienced more discrimination than those from the food secure groups. Individual from the food insecure with moderate hunger group had significantly higher BMIs (33.13), followed by participants from the food insecure without hunger (31.76), food secure at risk (29.94), and food secure groups (28.64, $p<0.05$). These findings support those findings of Kaiser et al. (2004), Jyoti et al. (2005), Shariff and Khor (2005), Olson et al. (1999) and Wilde and Peterman (2006) who found that the risk of obesity increased with

growing severity of food insecurity. In addition, Abell and Richards (1996) indicated that upper class women showed the highest level of body image satisfaction and positive self-esteem. Results from our study also indicated that individuals from the food secure group were more likely to have a higher level of body image satisfaction and positive self-esteem than those from the food insecure groups. However, a finding from this study was not supported by Gulliford et al. (2005) who found that participants from the food secure groups were more likely to attempt to conceal the body or improve the body than those from the food insecure groups.

Implications

It has been reported that differences in obesity are associated with a significant difference in perception of body image among diverse ethnic groups and that these differences in perceptions of body image affect weight change and weight control. Our results do not support this notion. We posit that ethnic differences are not as evident when individuals share common experiences such as poverty and similar body weight status. In contrast to previous studies, our sample was composed of individuals of limited resources (average annual income was less than $20,000). It is possible that being in poverty is a more influential factor on body weight than ethnicity among individuals of limited resources.

As demographic data indicated, the majority of participants from this study had less than annual income of $20,000 and had a least an elementary education level. In addition, nearly 85% of participants reported that they had no health insurance, over 50% were unemployed, and almost 80% were not married. Other elements of poverty

including mental resources, support systems, and relationships/role models play a vital role in the success of an individual in terms of coping with issues related to poverty. Being in poverty is not about a lack of intelligence or ability that impedes individuals from making healthful food and activity choices. Townsend et al. (2001) indicated that food insecurity could be a stressor which leads to a stress-induced weight change when discussing the "food stamp cycle". Townsend et al. posit that individuals experience stress due to lack of financial resources, which leads the individual to eat large amounts of food in short periods of time when those resources are available. Following a period of food insecurity, binging as a form of emotional eating appeared in individuals from low-income households, which may lead to eating disorder and obesity. In addition, individuals in poverty are more likely to have lower self-esteem, which is also a high risk of psychological problems regarding emotional eating disorders.

Future research

Findings from this study may have important insights for developing effective obesity prevention and management programs for those living in poverty. Although the Food Stamp Program is a resource to help individuals prevent hunger, programs might also consider addressing emotional management skills to cope with life stressors associated with poverty. Such life stressors may lead to unhealthful eating strategies and perpetuate increases in body weight. The challenge will be for educators to cross disciplinary lines and develop nutrition education programs that integrate psychosocial factors influencing body weight.

Additional research is necessary to explore psychosocial factors influencing body weight among food stamp recipients. Because we have a somewhat large and unique data set, we recommend that additional analyses be conducted using the current data set. Analyzing the data using regression analyses, may yield important information regarding factors influencing body weight. An examination of explanatory factors influencing body weight could yield important results that were not evident from our current analyses. In addition to further quantitative analyses of the current data set, qualitative research might also be warranted to gain insight in terms of food stamp recipients views of each of the factors influencing overweight examined. Furthermore, a qualitative exploration of food used as an emotional coping strategy among food stamp population is suggested. Finally, we recommend that research and educational programs not focus so much on body weight but rather factors influencing food choices during stressful times.

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APPENDIX A

PRE-NOTIFICATION LETTER

March 13, 2006

Dear Oklahoma Family,

The Department of Nutritional Sciences at Oklahoma State University is requesting that you participate in a research study regarding factors that influence body weight among food stamp recipients in Oklahoma. You are being asked to take part in this study because you have received food stamps in the last three months.

Your name was provided by the Oklahoma Department of Human Services. About 400 people will take part in this study in Oklahoma. These people were selected from a list of individuals who have received food stamps since November 2005. In about a week someone will be calling you from the Bureau of Social Research at Oklahoma State University. They will ask you questions over the phone about the money you have for food, your body weight, and life experiences. **If you complete the phone survey, a check will be mailed to you in the amount of $20.00** as a special thank you for the information you provide.

The information you give us will be used to develop nutrition programs to benefit people who receive food stamps. There are no risks or benefits to you for participating in this study. Your alternative is not to participate in this study.
Some questions may be sensitive such as items regarding race, body weight, and psychological stress. Your personal information will be kept private. You will <u>not</u> be identified by name or description in any reports about this study. Instead, your answers will be grouped with those from other participants.

Taking part in this study is voluntary. You may choose not to take part at any time. If you have questions contact **Dr. Stephany Parker**, Department of Nutritional Sciences, 419 HES, Oklahoma State University, at telephone number 405-744-6821. For questions about your rights as a research subject, you may contact Dr. Sue Jacobs, IRB Chair, 415 Whitehurst Hall, Oklahoma State University, Stillwater, OK 74078; at telephone number 405-744-1676.

Thank you for helping.

Sincerely,

Stephany Parker, Assistant Professor
Nutritional Science

APPENDIX B

TELEPHONE SURVEY QUESTIONNAIRE

CATI ON
COL 112
HIGHCOL 79
HELPBTN ON
OPNENTER ON
SQN RIGHT

Q: HELLO1
T: 1 1
Hello, my name is _____ and I'm calling from the Bureau for Social Research at Oklahoma State University. Earlier this month you received a letter from Dr. Stephany Parker informing you about a survey being conducted at Oklahoma State. This survey will help us understand how men and women of different ages see their bodies and how this relates to the ways people feel about themselves and interact with others.

*IWER: SELECT '1' to continue with interview
PRESS 'CTRL+END' if currently not available
T: 15 1 1
Hello, may I please speak with _____? This is _____ and I'm calling from Oklahoma State University. We called you a few days ago to ask you some questions about how men and women of different ages see their bodies and how this relates to the ways people feel about themselves and interact with others. I'm calling now to finish
that interview.

*IWER: PRESS '1' to restart
I:
COL 121 21 22
NUM 1 1

Q: HELLO2
T: 5 1
There are no 'right' or 'wrong' answers. We are just asking that you share your feelings and experiences on the different topics. The survey should only take about 20 minutes and you will receive a check for $20.00 if you decide to complete the survey. Remember all information you provide will be kept confidential. Do you agree to participate in this study?

*IWER: SELECT '1' to continue with interview
PRESS 'CTRL+END' if currently not available

I:
COL 121 11 12
NUM 1 1

QAL Notqal

INTDATE = SYSDATE
INTTIME = SYSTIME

CMDI ATTNUM "NumberOfAttempt"
CMDI RECNUM "RecordNumber"
CMDI IWERID "CurrentInterviewerID"
CMDI QUOTA "PreassignedQuota"
CMDI ADDRESS "Address"
CMDI CITY "City"
CMDI STATE "State"
CMDI ZIPC "Zip"

C: Section A. Body Image

Q: Q1
T: 5 4
To begin, I'd like to ask you a few questions about how satisfied you are with your body. There are no right or wrong answers. I just want to know how you feel. How satisfied are you with your WEIGHT? Would you say extremely dissatisfied, fairly dissatisfied, neutral, fairly satisfied, or extremely satisfied?
T: 11 4
1 Extremely dissatisfied
2 Fairly dissatisfied
3 Neutral
4 Fairly satisfied
5 Extremely satisfied
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 11 9 1
HLA .3
NUM 1 9

```
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q: Q2
T: 5 4
How satisfied are you with your BODY SHAPE? Would you say extremely dissatisfied, fairly dissatisfied, neutral, fairly satisfied, or extremely satisfied?
T: 10 4
1 Extremely dissatisfied
2 Fairly dissatisfied
3 Neutral
4 Fairly satisfied
5 Extremely satisfied
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
(Body shape gives us a general idea of fat distribution. Think about proportionality: are you generally satisfied with the shape of the tummy, hips, buttocks and thighs?)
I:

```
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q: Q3
T: 5 4
How satisfied are you with your MUSCLE SIZE? Would you say extremely dissatisfied, fairly dissatisfied, neutral, fairly satisfied, or extremely satisfied?

T: 10 4
1 Extremely dissatisfied
2 Fairly dissatisfied
3 Neutral
4 Fairly satisfied
5 Extremely satisfied
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
(Muscle size: we are interested in your perceptions of whether your overall musculature is too small, too big, or just right. Think of the body muscles overall (tummy, hips, buttocks and thighs) when answering this question.)
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

C: Section B. Is the way your body looks important?

Q: Q4
T: 5 4
Now, I'd like to ask you questions to find out how you feel about your body. How important to you is WHAT YOU WEIGH compared to other things in your life? Would you say extremely unimportant, fairly unimportant, neutral, fairly important, extremely important?
T: 10 4
1 Extremely unimportant
2 Fairly unimportant
3 Neutral
4 Fairly important
5 Extremely important
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]

9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q5
T: 5 4
How important to you is the SHAPE OF YOUR BODY compared to other things in your life? Would you say extremely unimportant, fairly unimportant, neutral, fairly important, extremely important?
T: 10 4
1 Extremely unimportant
2 Fairly unimportant
3 Neutral
4 Fairly important
5 Extremely important
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q6
T: 5 4
How important to you is the SIZE OF YOUR MUSCLES compared to other things in

your life? Would you say extremely unimportant, fairly unimportant, neutral, fairly important, extremely important?
T: 10 4
1 Extremely unimportant
2 Fairly unimportant
3 Neutral
4 Fairly important
5 Extremely important
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q7
T: 5 4
How important to you is the way people of the SAME sex view your body compared to other things in your life? Would you say extremely unimportant, fairly unimportant, neutral, fairly important, extremely important?
T: 10 4
1 Extremely unimportant
2 Fairly unimportant
3 Neutral
4 Fairly important
5 Extremely important
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3

NUM 1 9
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q8
T: 5 4
How important to you is the way people of the OPPOSITE sex view your body compared to other things in your life? Would you say extremely unimportant, fairly unimportant, neutral, fairly important, extremely important?
T: 10 4
1 Extremely unimportant
2 Fairly unimportant
3 Neutral
4 Fairly important
5 Extremely important
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 5)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

C: Section C. Body Image Behavior Scale

Q: Q10
T: 5 4
Now I'd like to know how often you do various behaviors. For each one, please tell me if you do the behavior never, rarely, sometimes, often, usually, or always. You buy products that you hope will give you a

better body.
T: 10 4
1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q11
T: 5 4
You wear clothes that hide the parts of your body you don't like.
T: 10 4
1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)

```
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q12
T: 5 4
You exercise in order to get a better body.
T: 10 4
1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q13
T: 5 4
You avoid situations where people are likely to 'check out' your appearance.
T: 10 4
1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
```

9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q14
T: 5 4
You try to eat only foods that will help you to improve your body shape or weight.
T: 10 4
1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q15
T: 5 4
You try to make sure people can't see what your body really looks like.
T: 10 4

1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q16
T: 5 4
You avoid shopping for clothes because you do not want to focus on your body.
T: 10 4
1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)
    BEEP

```
    REASK
  ENDIF
ENDIF

Q: Q17
T: 5 4
You spend time making your body look better.
T: 10 4
1 Never
2 Rarely
3 Sometimes
4 Often
5 Usually
6 Always
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

C: Section D.  How physically attractive do you look?

Q: Q18
T: 5 4
Now I'd like to ask you some questions about how attractive you feel.
Compared to other people of the same sex, you are...extremely unattractive,
of average attractiveness, extremely attractive?
T: 10 4
1 Extremely unattractive
2 Of average attractiveness
3 Extremely attractive
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
```

[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 3)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q19
T: 5 4
Members of the opposite sex usually think you are...extremely unattractive, of average attractiveness, extremely attractive
T: 10 4
1 Extremely unattractive
2 Of average attractiveness
3 Extremely attractive
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 3)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q20

T: 5 4
If people had to rate your appearance, they would probably say you are...
extremely unattractive, of average attractiveness, extremely attractive
T: 10 4
1 Extremely unattractive
2 Of average attractiveness
3 Extremely attractive
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 3)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

C: Section E. The Rosenberg Questionnaire

Q: Q21
T: 5 4
The next questions look at how you generally feel about yourself. Remember there are no right or wrong answers. I'll read a statement and you can tell me if you strongly disagree, disagree, agree, or strongly agree. You feel that you are a person of worth, at least on an equal basis with others.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]

9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q22
T: 5 4
You feel that you have a number of good qualities. Do you strongly disagree, disagree, agree, or strongly agree?
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q23
T: 5 4
All in all, you are inclined to feel that you are a failure.
T: 10 4

1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q24
T: 5 4
You are able to do things as well as most other people.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK

```
  ENDIF
ENDIF

Q: Q25
T: 5 4
You feel you do not have much to be proud of.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q26
T: 5 4
You take a positive attitude toward yourself.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
```

```
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q: Q27
T: 5 4
On the whole, you are satisfied with yourself.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:

```
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q: Q28
T: 5 4
You wish you could have more respect for yourself.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree

4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q29
T: 5 4
You certainly feel useless at times.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q30
T: 5 4
At times you think you are no good at all.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

C: Section F. Food Security Scale

Q: Q31
T: 5 4
These next questions are about the food eaten in your household in the last 12 months and whether you were able to afford the food you need. I'm going to read you two statements that people have made about their food situation. Please tell me whether the statement was OFTEN, SOMETIMES, or NEVER true for you and the other members of your household in the last 12 months.

The first statement is, "The food that we bought just didn't last, and we didn't have money to get more." Was that often, sometimes, or never true for your household in the last 12 months?
T: 15 5
1 Often true
2 Sometimes true
3 Never true

[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 15 9 1
HLA .3
NUM 1 9
IF (ANS > 3)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q32
T: 5 4
"We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for your household in the last 12 months?
T: 10 4
1 Often true
2 Sometimes true
3 Never true
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 3)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q33
T: 5 4
In the last 12 months, since March 2005, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food, yes or no?
T: 10 4
1 Yes
2 No
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q34
T: 5 4
How often did this happen? Was it almost every month, some months but not every month, or in only 1 or 2 months?
T: 10 4
1 Almost every month
2 Some months but not every month
3 Only 1 or 2 months
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer

I:
IF (Q33 <> 1) SKP
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 3)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q35
T: 5 4
In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food, yes or no?
T: 10 4
1 Yes
2 No
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q36
T: 5 4
In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food, yes or no?

T: 10 4
1 Yes
2 No
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

C: Section G. Discrimination Scale

Q: Q37
T: 5 4
The next questions deal with how you think you have been treated by others on a day to day basis. In your day to day life, how often have any of the following things happened to you? For each item, please tell me if the experience has happened four or more times, two or three times, once, or never. You have been treated with less COURTESY than other people?
T: 11 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:

```
LOC 11 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q37Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(You have been treated with less courtesy than other people?)
I:
IF (Q37 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q37YOTH
T: 5 4
          *IWER: TYPE 'OTHER' here

I:
IF (Q37Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q37YOTH
IF (X = 0)
  BEEP
```

```
  REASK
ENDIF

Q: Q38
T: 5 4
You have been treated with less RESPECT than other people.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q38Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(You have been treated with less respect than other people.)
```

I:
IF (Q38 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q38YOTH
T: 5 4
*IWER: TYPE 'OTHER' here

I:
IF (Q38Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q38YOTH
IF (X = 0)
BEEP
REASK
ENDIF

Q: Q39
T: 5 4
You have received poorer service than other people at restaurants and stores.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
IF (ANS < 9)
BEEP

```
   REASK
  ENDIF
ENDIF

Q: Q39Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(You have received poorer service than other people at restaurants and
stores.)
I:
IF (Q39 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q: Q39YOTH
T: 5 4
          *IWER: TYPE 'OTHER' here

I:
IF (Q39Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q39YOTH
IF (X = 0)
  BEEP
  REASK
ENDIF

Q: Q40
T: 5 4
```

You have received poorer service than others at the doctor.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q40Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(You have received poorer service than others at the doctor.)
I:
IF (Q40 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

```
Q:Q40YOTH
T: 5 4
        *IWER: TYPE 'OTHER' here

I:
IF (Q40Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q40YOTH
IF (X = 0)
  BEEP
  REASK
ENDIF

Q: Q41
T: 5 4
People have acted as if they think you are not smart.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q41Y
T: 5 4
```

What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(People have acted as if they think you are not smart.)
I:
IF (Q41 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q41YOTH
T: 5 4
*IWER: TYPE 'OTHER' here

I:
IF (Q41Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q41YOTH
IF (X = 0)
BEEP
REASK
ENDIF

Q: Q42
T: 5 4
People have acted as if they are afraid of you.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]

[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q42Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(People have acted as if they are afraid of you.)
I:
IF (Q42 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q42YOTH
T: 5 4
        *IWER: TYPE 'OTHER' here

I:
IF (Q42Y <> 9) SKP

```
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q42YOTH
IF (X = 0)
  BEEP
  REASK
ENDIF

Q: Q43
T: 5 4
People have acted as if they think you are dishonest.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q43Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
```

6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(People have acted as if they think you are dishonest.)
I:
IF (Q43 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q43YOTH
T: 5 4
*IWER: TYPE 'OTHER' here

I:
IF (Q43Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q43YOTH
IF (X = 0)
BEEP
REASK
ENDIF

Q: Q44
T: 5 4
People have acted as if they're better than you.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3

```
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q44Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(People have acted as if they're better than you.)
I:
IF (Q44 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q44YOTH
T: 5 4
          *IWER: TYPE 'OTHER' here

I:
IF (Q44Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q44YOTH
IF (X = 0)
  BEEP
  REASK
ENDIF
```

Q: Q45
T: 5 4
You have been called names or insulted.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q45Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(You have been called names or insulted.)
I:
IF (Q45 > 3) SKP

```
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q45YOTH
T: 5 4
        *IWER: TYPE 'OTHER' here

I:
IF (Q45Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q45YOTH
IF (X = 0)
  BEEP
  REASK
ENDIF

Q: Q46
T: 5 4
You have been threatened or harassed.
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q: Q46Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(You have been threatened or harassed.)
I:
IF (Q46 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q46YOTH
T: 5 4
*IWER: TYPE 'OTHER' here

I:
IF (Q46Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q46YOTH
IF (X = 0)
BEEP
REASK
ENDIF

Q: Q47
T: 5 4
At any time in your life have you been unfairly fired?
T: 10 4
1 Four or more times
2 Two or three times

3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q47Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race
4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
I:
IF (Q47 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q47YOTH
T: 5 4
*IWER: TYPE 'OTHER' here

I:
IF (Q47Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q47YOTH
IF (X = 0)
  BEEP
  REASK
ENDIF

Q: Q48
T: 5 4
For unfair reasons, have you ever not been hired for a job?
T: 10 4
1 Four or more times
2 Two or three times
3 Once
4 Never
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Q48Y
T: 5 4
What do you think was the main reason for this experience?
T: 10 4
1 Your ancestry or national origins
2 Your gender
3 Your race

4 Your age
5 Your height
6 Your weight
7 Your shade of skin color
8 Your education or income
9 Other
(For unfair reasons, have you ever not been hired for a job?)
I:
IF (Q48 > 3) SKP
LOC 10 9 1
HLA .3
NUM 1 9

Q:Q48YOTH
T: 5 4
*IWER: TYPE 'OTHER' here

I:
IF (Q48Y <> 9) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN Q48YOTH
IF (X = 0)
BEEP
REASK
ENDIF

C: Section G. Race/Ethnic Group

Q:QJ8
T: 5 4
The next few questions are about your race, ethnicity or your ethnic group and how you feel about it or react to it. .

Are you of Hispanic, Latino/a, or Spanish origin, yes or no?
T: 10 4
1 Yes
2 No
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]

[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ9
T: 5 4
What race do you consider yourself?

*IWER: Do NOT read - unless needed

T: 10 4
1 White
2 Black or African American
3 American Indian or Alaska Native
4 Asian
5 Native Hawaiian or Other Pacific Islander
6 More than one race - specify:
7 Some other race - specify:
8 Don't know
9 Refused

If "Hispanic" *PROBE (if still "Hispanic", SELECT "Other")
If "Mixed" *PROBE (if no dominant race, SELECT "More than one")
I:
COL 121 7
COL 121 20 9 67
COL 121 21 9 72
LOC 10 9 1
HLA .3
NUM 1 9

Q:QJ9OTH
T: 5 4
*IWER: ENTER 'OTHER' race here

I:
IF (QJ9 <> 7) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN QJ9OTH
IF (X = 0)
  BEEP
  REASK
ENDIF

Q:QJ9MORE
T: 5 4
*IWER: ENTER races here

I:
IF (QJ9 <> 6) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN QJ9MORE
IF (X = 0)
  BEEP
  REASK
ENDIF

Q: QJ10
T: 5 4
I'll read a statement and you can tell me if you strongly disagree, disagree, agree, or strongly agree to each statement given your ethnicity or ethnic group

The first statement is: I have a clear sense of my ethnic background and what it means for me. Do you...
T: 12 4
1 Strongly disagree
2 Disagree
3 Agree

4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 12 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ11
T: 5 4
I am happy that I am a member of the ethnic group I belong to.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ12
T: 5 4
I have a strong sense of belonging to my own ethnic group.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ13
T: 5 4
I understand pretty well what my ethnic group membership means to me.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9

```
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ14
T: 5 4
I have a lot of pride in my ethnic group.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ15
T: 5 4
I feel a strong attachment towards my own ethnic group.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
```

[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ16
T: 5 4
I feel good about my cultural or ethnic background.
T: 10 4
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

C: Section J. Demographics

Q: QJ1

T: 5 4
Before ending this interview I have a few remaining background questions. Please tell me how old you were on your last birthday.

Range = 18-118 years old

*IWER: ENTER age here

888 Don't know -> *ASK what year born in (fill out data correction sheet)
999 Refused to answer --> *ASK what year born in (fill out data c. sheet)

I:
COL 121 10
COL 121 12 26 48
COL 121 13 33 55
NUM 18 999 3 0 10 30
IF (ANS > 0)
  IF (ANS < 18)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 118)
  IF (ANS < 888)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 888)
  IF (ANS < 999)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ2
T: 1 4
What county do you live in?

1 ADAIR	21 DELAWARE	41 LINCOLN	61 PITTSBURG
2 ALFALFA	22 DEWEY	42 LOGAN	62 PONTOTOC

3 ATOKA 23 ELLIS 43 LOVE 63 POTTAWATOMIE
4 BEAVER 24 GARFIELD 44 McCLAIN 64 PUSHMATAHA
5 BECKHAM 25 GARVIN 45 McCURTAIN 65 ROGER MILLS
6 BLAINE 26 GRADY 46 McINTOSH 66 ROGERS
7 BRYAN 27 GRANT 47 MAJOR 67 SEMINOLE
8 CADDO 28 GREER 48 MARSHALL 68 SEQUOYAH
9 CANADIAN 29 HARMON 49 MAYES 69 STEPHENS
10 CARTER 30 HARPER 50 MURRAY 70 TEXAS
11 CHEROKEE 31 HASKELL 51 MUSKOGEE 71 TILLMAN
12 CHOCTAW 32 HUGHES 52 NOBLE 72 TULSA
13 CIMARRON 33 JACKSON 53 NOWATA 73 WAGONER
14 CLEVELAND 34 JEFFERSON 54 OKFUSKEE 74 WASHINGTON
15 COAL 35 JOHNSTON 55 OKLAHOMA 75 WASHITA
16 COMANCHE 36 KAY 56 OKMULGEE 76 WOODS
17 COTTON 37 KINGFISHER 57 OSAGE 77 WOODWARD
18 CRAIG 38 KIOWA 58 OTTAWA
19 CREEK 39 LATIMER 59 PAWNEE
20 CUSTER 40 LeFLORE 60 PAYNE

88 Don't know --> *ASK what city (fill out data correction sheet)
99 Refused to answer
*IWER: ENTER code here

```
I:
COL 121 25
COL 121 23 37 51
NUM 1 99 2 0 25 32
IF (ANS > 77)
  IF (ANS < 88)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 88)
  IF (ANS < 99)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ3
```

T: 5 4
What is your zip code?

Range = 73001 - 74966

*IWER: ENTER code here

88888 Don't know --> *ASK what city (fill out data correction sheet)
99999 Refused to answer

I:
COL 121 9
NUM 73001 99999 5 0 9 33
IF (ANS > 74966)
  IF (ANS < 88888)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 88888)
  IF (ANS < 99999)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ4
T: 5 4
Do you own or rent your residence?
T: 10 4
1 Own
2 Rent
3 Other - specify:
[4 Live with parents/children/other relatives]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1

```
HLA .3
NUM 1 9
IF (ANS > 4)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ4OTH
T: 5 4
          *IWER: TYPE 'OTHER' residence here

I:
IF (QJ4 <> 3) SKP
COL 121 5
OPN 6 9 6 75
X=ANSLEN QJ4OTH
IF (X=0)
  BEEP
  REASK
ENDIF

Q:QJ5
T: 5 4
Are you married, never married, divorced, widowed, or separated?
T: 10 4
1 Married
2 Never married
3 Divorced
4 Widowed
5 Separated
6 Married, but living apart
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 6)
```

```
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q:QJ6
T: 5 4
Are you currently living with someone in a marriage-like relationship?
T: 10 4
1 Yes
2 No
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:

```
IF (QJ5 = 1) SKP
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q:QJ7
T: 5 4
What is the highest level of school you have completed?

*IWER: Enter level here

T: 10 4
1 Less than 9th grade
2 9th to 12th grade, no diploma
3 High school graduate (includes equivalency)

4 Some college, no degree
5 Associate degree
6 Bachelor's degree (BA, BS)
7 Graduate or professional degree (master's, doctorate, MS, MA, PhD,
Law degree, Medical degree)
8 Other - specify:

88 Don't know
99 Refused to answer
I:
COL 121 7
NUM 1 99 2 0 7 33
IF (ANS > 8)
  IF (ANS < 88)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 88)
  IF (ANS < 99)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ7OTH
T: 5 4
*IWER: TYPE 'OTHER' level of school here

I:
IF (QJ7 <> 8) SKP
COL 121 5
OPN 6 9 6 75
X = ANSLEN QJ7OTH
IF (X = 0)
  BEEP
  REASK
ENDIF

Q:QJ17

T: 5 4
Did you have a paying job last week, yes or no?
T: 10 4
1 Yes
2 No
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ18
T: 5 4
Were you working full-time or part-time?
T: 10 4
1 Full-time
2 Part-time
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
IF (QJ17 <> 1) SKP
LOC 10 9 1
HLA .3
NUM 1 9

IF (ANS > 2)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ19
T: 5 4
Do you consider yourself retired, unemployed, a student, or a homemaker?
T: 10 4
1 Retired
2 Unemployed
3 A student
4 A homemaker
[5 Disabled]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
IF (QJ17 <> 2) SKP
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 5)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ20
T: 5 4
How many people are living in your household now, INCLUDING yourself?

Range = 1-19

*IWER: ENTER number of people here

88 Don't know

99 Refused to answer

I:
COL 121 9
NUM 1 99 2 0 9 45
IF (ANS > 19)
  IF (ANS < 88)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 88)
  IF (ANS < 99)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ21
T: 5 4
How many of these persons are under the age of 18?

Range = 0-19

*IWER: ENTER number of people here
If none, ENTER '0'

88 Don't know
99 Refused to answer

I:
IF (QJ15 = 1) SKP
COL 121 9
NUM 0 99 2 0 9 45
IF (ANS > 19)
  IF (ANS < 88)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 88)

```
  IF (ANS < 99)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q:QJ22
T: 5 4
Is your total household income (before taxes) $20,000 or more, or is it less than $20,000?
T: 10 4
1 $20,000 or more
2 Less than $20,000
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:

```
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 8)
    BEEP
    REASK
  ENDIF
ENDIF
```

Q:QJ23
T: 5 4
Now I'm going to mention a number of income categories. When I mention the category that describes your total household income (before taxes) in the last 12 months, please stop me.
T: 10 4
1 $20,000 but less than $25,000
2 $25,000 but less than $30,000
3 $30,000 but less than $35,000
4 $35,000 but less than $40,000

5 $40,000 but less than $45,000
6 $45,000 but less than $50,000
7 $50,000 but less than $60,000
8 $60,000 but less than $75,000
9 $75,000 but less than $100,000
10 $100,000 or more

*IWER: Enter response here

88 Don't know
99 Refused to answer
I:
IF (QJ22 <> 1) SKP
COL 121 21
NUM 1 99 2 0 21 36
IF (ANS > 10)
  IF (ANS < 88)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 88)
  IF (ANS < 99)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ24
T: 5 4
Now I'm going to mention a number of income categories. When I mention the category that describes your total household income (before taxes) in the last 12 months, please stop me.
T: 10 4
1 Under $5,000
2 $5,000 but less than $10,000
3 10,000 but less than $15,000
4 $15,000 but less than $20,000

*IWER: Enter response here

88 Don't know
99 Refused to answer

I:
IF (QJ22 <> 2) SKP
COL 121 15
NUM 1 99 2 0 15 36
IF (ANS > 4)
  IF (ANS < 88)
    BEEP
    REASK
  ENDIF
ENDIF
IF (ANS > 88)
  IF (ANS < 99)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ25
T: 5 4
How many persons in the household contributed earnings or income that was part of the total household income you gave me?

Range = 1-19

*IWER: ENTER number of people here

88 Don't know
99 Refused to answer

(If RETIRED: ask how many persons contributed to the retirement income)
I:
COL 121 10
NUM 1 99 2 0 10 45
IF (ANS > 19)
  IF (ANS < 88)
    BEEP
    REASK
  ENDIF

```
ENDIF
IF (ANS > 88)
  IF (ANS < 99)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ26
T: 5 4
What is your height?

        *IWER:  ENTER height here
        (Note # feet and # inches)
I:
COL 121 7
OPN 7 35 7 50
X = ANSLEN QJ26
IF (X = 0)
        BEEP
        REASK
ENDIF

Q: QJ27
T: 5 4
What is your weight?

        Range = 75-500

        *IWER:  ENTER weight here

        888 = Don't know
        999 = Refused to answer
I:
COL 121 9
NUM 75 999 3 0 9 35
IF (ANS > 500)
  IF (ANS < 888)
    BEEP
    REASK
  ENDIF
```

```
ENDIF
IF (ANS > 888)
  IF (ANS < 999)
    BEEP
    REASK
  ENDIF
ENDIF

Q: QJ28
T: 5 4
Do you have health insurance provided by your employer or your spouse's
employer, yes or no?
T: 10 4
1 Yes
2 No
[3 INVALID RESPONSE]
[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
[8 INVALID RESPONSE]
9 Refused to answer
I:
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q:QJ29
T: 5 4
        *IWER:  RECORD gender of respondent
        (Ask only if unsure)
T: 10 4
1 Male
2 Female
[3 INVALID RESPONSE]
```

[4 INVALID RESPONSE]
[5 INVALID RESPONSE]
[6 INVALID RESPONSE]
[7 INVALID RESPONSE]
8 Don't know
9 Refused
I:
COL 121 5
LOC 10 9 1
HLA .3
NUM 1 9
IF (ANS > 2)
  IF (ANS < 9)
    BEEP
    REASK
  ENDIF
ENDIF

Q: Verify
T: 5 4
Those are all of my questions. Before we go, let me verify your mailing address so that we can mail your $20 check to you.

*IWER: Enter correct address - street, city, state, zip

I:
SHOW ADDRESS 8 9 40 124 L
SHOW CITY 9 9 25 124 L
SHOW STATE 9 35 3 124 L
SHOW ZIPC 9 40 5 124 L
COL 121 11
OPN 10 9 10 75
X = ANSLEN Verify
IF (X = 0)
    BEEP
    REASK
ENDIF

Q: Thank
T: 5 4
Thank you for your time. Have a good day.
I:
CPL
DISPOS = 110
PAUSE 5
ENDQUEST

Q: Notqal
T: 5 4
I'm sorry but we need to speak with the individual who recieved the letter.
Thank you for your time.

*IWER: PRESS '1' to terminate
I:
COL 121 7
NUM 1 1
ENDQUEST

APPENDIX C

POST-HOC TEST

Tukey HSD by racial groups

Dependent Variable	(I) Quota cell	(J) Quota cell	Mean	SD	p-value
Body satisfaction	African American	Hispanic	.27000	.45264	.933
		Native American	.81000	.45264	.280
		White	.53000	.45264	.646
	hispanic	African American	-.27000	.45264	.933
		Native American	.54000	.45264	.632
		White	.26000	.45264	.940
	Native American	African American	-.81000	.45264	.280
		Hispanic	-.54000	.45264	.632
		White	-.28000	.45264	.926
	White	African American	-.53000	.45264	.646
		Hispanic	-.26000	.45264	.940
		Native American	.28000	.45264	.926
Body image importance	African American	Hispanic	-.44364	.66545	.910
		Native American	1.29293	.66712	.214
		White	1.24861	.66882	.244
	Hispanic	African American	.44364	.66545	.910
		Native American	1.73657*	.66545	.046
		White	1.69224	.66716	.056
	Native American	African American	-1.29293	.66712	.214
		Hispanic	-1.73657*	.66545	.046
		White	-.04432	.66882	1.000
	White	African American	-1.24861	.66882	.244
		Hispanic	-1.69224	.66716	.056

		Native American	.04432	.66882	1.000
Body image behavior	African American	Hispanic	1.52947	1.17490	.562
		Native American	1.10000	1.15974	.779
		White	2.31374	1.16266	.193
	Hispanic	African American	-1.52947	1.17490	.562
		Native American	-.42947	1.17490	.983
		White	.78426	1.17778	.910
	Native American	African American	-1.10000	1.15974	.779
		Hispanic	.42947	1.17490	.983
		White	1.21374	1.16266	.724
	White	African American	-2.31374	1.16266	.193
		Hispanic	-.78426	1.17778	.910
		Native American	-1.21374	1.16266	.724
Positive self-esteem	black	Hispanic	.24292	.34802	.898
		Native American	.67253	.34532	.210
		White	.49000	.34445	.486
	Hispanic	African American	-.24292	.34802	.898
		Native American	.42961	.34888	.607
		White	.24708	.34802	.893
	Native American	African American	-.67253	.34532	.210
		Hispanic	-.42961	.34888	.607
		White	-.18253	.34532	.952
	White	African American	-.49000	.34445	.486
		Hispanic	-.24708	.34802	.893
		Native American	.18253	.34532	.952
Negative self-esteem	African American	Hispanic	-1.14141*	.42750	.039
		Native American	-1.15058*	.42970	.039
		White	-1.64646*	.42750	.001

	Hispanic	African American	1.14141*	.42750	.039
		Native American	-.00916	.42970	1.000
		White	-.50505	.42750	.639
	Native American	African American	1.15058*	.42970	.039
		Hispanic	.00916	.42970	1.000
		White	-.49589	.42970	.656
	White	African American	1.64646*	.42750	.001
		Hispanic	.50505	.42750	.639
		Native American	.49589	.42970	.656
Food security	African American	Hispanic	.04000	.31046	.999
		Native American	.05000	.31046	.999
		White	.30737	.31124	.757
	Hispanic	African American	-.04000	.31046	.999
		Native American	.01000	.31046	1.000
		White	.26737	.31124	.826
	Native American	African American	-.05000	.31046	.999
		Hispanic	-.01000	.31046	1.000
		White	.25737	.31124	.842
	White	African American	-.30737	.31124	.757
		Hispanic	-.26737	.31124	.826
		Native American	-.25737	.31124	.842
Discrimination	African American	Hispanic	-.94000	.92111	.738
		Native American	.23000	.92111	.995
		White	-1.84000	.92111	.191
	Hispanic	African American	.94000	.92111	.738
		Native American	1.17000	.92111	.582
		White	-.90000	.92111	.763
	Native American	African American	-.23000	.92111	.995

		Hispanic	-1.17000	.92111	.582
		White	-2.07000	.92111	.112
	White	African American	1.84000	.92111	.191
		Hispanic	.90000	.92111	.763
		Native American	2.07000	.92111	.112
Ethnic identity	African American	Hispanic	.78421	.47576	.353
		Native American	.30215	.47837	.922
		White	1.02955	.48536	.148
	Hispanic	African American	-.78421	.47576	.353
		Native American	-.48206	.48440	.752
		White	.24533	.49131	.959
	Native American	African American	-.30215	.47837	.922
		Hispanic	.48206	.48440	.752
		White	.72739	.49384	.455
	White	African American	-1.02955	.48536	.148
		Hispanic	-.24533	.49131	.959
		Native American	-.72739	.49384	.455
BMI	African American	Hispanic	1.18994	1.04499	.666
		Native American	-.21360	1.02809	.997
		White	2.25166	1.02545	.126
	Hispanic	African American	-1.18994	1.04499	.666
		Native American	-1.40355	1.04758	.538
		White	1.06171	1.04499	.740
	Native American	African American	.21360	1.02809	.997
		Hispanic	1.40355	1.04758	.538
		White	2.46526	1.02809	.079
	White	African American	-2.25166	1.02545	.126
		Hispanic	-1.06171	1.04499	.740

	Native American	-2.46526	1.02809	.079

*. The mean difference is significant at the 0.05 level.

Games-Howell by racial groups

Dependent Variable	(I) Quota cell	(J) Quota cell	Mean	SD	p-value
Negative self-esteem	African American	Hispanic	-1.14141*	.41031	.030
		Native American	-1.15058*	.39485	.021
		White	-1.64646*	.44966	.002
	Hispanic	African American	1.14141*	.41031	.030
		Native American	-.00916	.40561	1.000
		White	-.50505	.45913	.690
	Native American	African American	1.15058*	.39485	.021
		Hispanic	.00916	.40561	1.000
		White	-.49589	.44537	.682
	White	African American	1.64646*	.44966	.002
		Hispanic	.50505	.45913	.690
		Native American	.49589	.44537	.682
Discrimination	African American	Hispanic	-.94000	.92318	.739
		Native American	.23000	.99502	.996
		White	-1.84000	.88519	.164
	Hispanic	African American	.94000	.92318	.739
		Native American	1.17000	.95567	.612
		White	-.90000	.84072	.708
	Native American	African American	-.23000	.99502	.996
		Hispanic	-1.17000	.95567	.612
		White	-2.07000	.91903	.113

	White	African American	1.84000	.88519	.164
		Hispanic	.90000	.84072	.708
		Native American	2.07000	.91903	.113
Ethnic identity	African American	Hispanic	.78421	.49328	.387
		Native American	.30215	.49578	.929
		White	1.02955	.47585	.137
	Hispanic	African American	-.78421	.49328	.387
		Native American	-.48206	.48870	.757
		White	.24533	.46847	.953
	Native American	African American	-.30215	.49578	.929
		Hispanic	.48206	.48870	.757
		White	.72739	.47110	.414
	White	African American	-1.02955	.47585	.137
		Hispanic	-.24533	.46847	.953
		Native American	-.72739	.47110	.414
BMI	African American	Hispanic	1.18994	.94044	.586
		Native American	-.21360	1.07478	.997
		White	2.25166	1.08031	.162
	Hispanic	African American	-1.18994	.94044	.586
		Native American	-1.40355	.97588	.477
		White	1.06171	.98197	.701
	Native American	African American	.21360	1.07478	.997
		Hispanic	1.40355	.97588	.477
		White	2.46526	1.11129	.122
	White	African American	-2.25166	1.08031	.162
		Hispanic	-1.06171	.98197	.701
		Native American	-2.46526	1.11129	.122

*. The mean difference is significant at the 0.05 level.

Tukey HSD by BMI categories
(2:Normal weight, 3:Overweight, 4: Obesity, 5: Morbid Obesity)

Dependent Variable	BMI category	BMI category	Mean	SD	p-value
Body satisfaction	2	3	.93835	.40176	.092
		4	2.50112*	.38754	.000
		5	3.97263*	.50326	.000
	3	2	-.93835	.40176	.092
		4	1.56277*	.37004	.000
		5	3.03429*	.48991	.000
	4	2	-2.50112*	.38754	.000
		3	-1.56277*	.37004	.000
		5	1.47152*	.47832	.012
	5	2	-3.97263*	.50326	.000
		3	-3.03429*	.48991	.000
		4	-1.47152*	.47832	.012
Body image importance	2	3	.11244	.65857	.998
		4	-.75726	.63263	.629
		5	-1.24211	.82700	.437
	3	2	-.11244	.65857	.998
		4	-.86970	.60703	.480
		5	-1.35455	.80758	.337
	4	2	.75726	.63263	.629
		3	.86970	.60703	.480
		5	-.48485	.78657	.927
	5	2	1.24211	.82700	.437
		3	1.35455	.80758	.337
		4	.48485	.78657	.927

Body image behavior	2	3	-3.07466*	1.13998	.037
		4	-3.99436*	1.09533	.002
		5	-5.71830*	1.42061	.000
	3	2	3.07466*	1.13998	.037
		4	-.91970	1.04777	.816
		5	-2.64364	1.38427	.226
	4	2	3.99436*	1.09533	.002
		3	.91970	1.04777	.816
		5	-1.72394	1.34774	.577
	5	2	5.71830*	1.42061	.000
		3	2.64364	1.38427	.226
		4	1.72394	1.34774	.577
Positive self-esteem	2	3	.13763	.33386	.976
		4	.87351*	.32137	.035
		5	1.08865*	.41837	.047
	3	2	-.13763	.33386	.976
		4	.73588	.30650	.079
		5	.95102	.40706	.092
	4	2	-.87351*	.32137	.035
		3	-.73588	.30650	.079
		5	.21514	.39688	.949
	5	2	-1.08865*	.41837	.047
		3	-.95102	.40706	.092
		4	-.21514	.39688	.949
Negative self-esteem	2	3	-.09183	.43424	.997
		4	-.67742	.41820	.369
		5	-.71075	.54171	.556
	3	2	.09183	.43424	.997

		4	-.58559	.39781	.455
		5	-.61892	.52613	.642
	4	2	.67742	.41820	.369
		3	.58559	.39781	.455
		5	-.03333	.51296	1.000
	5	2	.71075	.54171	.556
		3	.61892	.52613	.642
		4	.03333	.51296	1.000
Food security	2	3	-.21504	.29984	.890
		4	.27089	.28922	.785
		5	1.09108*	.37809	.021
	3	2	.21504	.29984	.890
		4	.48593	.27617	.295
		5	1.30612*	.36819	.002
	4	2	-.27089	.28922	.785
		3	-.48593	.27617	.295
		5	.82019	.35960	.104
	5	2	-1.09108*	.37809	.021
		3	-1.30612*	.36819	.002
		4	-.82019	.35960	.104
Discrimination	2	3	-.21914	.87450	.994
		4	2.33238*	.84005	.029
		5	4.56632*	1.09089	.000
	3	2	.21914	.87450	.994
		4	2.55152*	.80606	.009
		5	4.78545*	1.06493	.000
	4	2	-2.33238*	.84005	.029
		3	-2.55152*	.80606	.009

		5	2.23394	1.03683	.138
	5	2	-4.56632*	1.09089	.000
		3	-4.78545*	1.06493	.000
		4	-2.23394	1.03683	.138
Ethic identity	2	3	-.75690	.48475	.402
		4	-.78965	.46905	.334
		5	-.05234	.59843	1.000
	3	2	.75690	.48475	.402
		4	-.03275	.43941	1.000
		5	.70456	.57550	.612
	4	2	.78965	.46905	.334
		3	.03275	.43941	1.000
		5	.73731	.56233	.556
	5	2	.05234	.59843	1.000
		3	-.70456	.57550	.612
		4	-.73731	.56233	.556

*. The mean difference is significant at the 0.05 level.

Positive self-esteem: Games-Howell by BMI categories
(2:Normal weight, 3:Overweight, 4: Obesity, 5: Morbid Obesity)

BMI category	BMI category	Mean	SD	p-value
2	3	.13763	.31224	.971
	4	.87351*	.31099	.028
	5	1.08865	.47550	.109
3	2	-.13763	.31224	.971

	4	.73588	.29557	.064
	5	.95102	.46555	.182
4	2	-.87351*	.31099	.028
	3	-.73588	.29557	.064
	5	.21514	.46472	.967
5	2	-1.08865	.47550	.109
	3	-.95102	.46555	.182
	4	-.21514	.46472	.967

Tukey HSD by Food security categories

(1:Food insecurity moderate hunger, 2:Food insecure without hunger, 3:Food secure at risk, 4:Food secure)

Dependent Variable	Food security category	Food security category	Mean	SD	p-value
Body satisfaction	1	2	-1.16935	.56623	.166
		3	-1.47614*	.52881	.028
		4	-2.28582*	.50587	.000
	2	1	1.16935	.56623	.166
		3	-.30679	.45987	.909
		4	-1.11647	.43329	.050
	3	1	1.47614*	.52881	.028
		2	.30679	.45987	.909
		4	-.80968	.38311	.151
	4	1	2.28582*	.50587	.000
		2	1.11647	.43329	.050
		3	.80968	.38311	.151
Body image importance	1	2	-.14850	.85289	.998
		3	1.48040	.79627	.248

		4	1.88828	.76236	.065
	2	1	.14850	.85289	.998
		3	1.62890	.69060	.087
		4	2.03677*	.65120	.010
	3	1	-1.48040	.79627	.248
		2	-1.62890	.69060	.087
		4	.40787	.57506	.893
	4	1	-1.88828	.76236	.065
		2	-2.03677*	.65120	.010
		3	-.40787	.57506	.893
Body image behavior	1	2	1.14667	1.50144	.871
		3	3.46867	1.39681	.064
		4	4.66684*	1.33440	.003
	2	1	-1.14667	1.50144	.871
		3	2.32201	1.22483	.232
		4	3.52017*	1.15315	.013
	3	1	-3.46867	1.39681	.064
		2	-2.32201	1.22483	.232
		4	1.19816	1.01317	.638
	4	1	-4.66684*	1.33440	.003
		2	-3.52017*	1.15315	.013
		3	-1.19816	1.01317	.638
Positive self-esteem	1	2	-.91273	.43120	.150
		3	-1.57015*	.40312	.001
		4	-2.00936*	.38513	.000
	2	1	.91273	.43120	.150
		3	-.65742	.34977	.239
		4	-1.09663*	.32889	.005

	3	1	1.57015*	.40312	.001
		2	.65742	.34977	.239
		4	-.43921	.29110	.433
	4	1	2.00936*	.38513	.000
		2	1.09663*	.32889	.005
		3	.43921	.29110	.433
Negative self-esteem	1	2	1.39117*	.52399	.041
		3	2.57835*	.49278	.000
		4	3.22879*	.46849	.000
	2	1	-1.39117*	.52399	.041
		3	1.18718*	.42949	.030
		4	1.83762*	.40139	.000
	3	1	-2.57835*	.49278	.000
		2	-1.18718*	.42949	.030
		4	.65044	.35969	.271
	4	1	-3.22879*	.46849	.000
		2	-1.83762*	.40139	.000
		3	-.65044	.35969	.271
Discrimination	1	2	-1.46130	1.04705	.503
		3	-4.56357*	.98053	.000
		4	-7.04571*	.93835	.000
	2	1	1.46130	1.04705	.503
		3	-3.10227*	.85344	.002
		4	-5.58442*	.80463	.000
	3	1	4.56357*	.98053	.000
		2	3.10227*	.85344	.002
		4	-2.48214*	.71593	.003
	4	1	7.04571*	.93835	.000

		2	5.58442*	.80463	.000
		3	2.48214*	.71593	.003
Ethnic identity	1	2	-1.27583	.62218	.172
		3	-.62539	.58560	.709
		4	-1.15484	.55910	.166
	2	1	1.27583	.62218	.172
		3	.65044	.50789	.576
		4	.12099	.47710	.994
	3	1	.62539	.58560	.709
		2	-.65044	.50789	.576
		4	-.52945	.42830	.604
	4	1	1.15484	.55910	.166
		2	-.12099	.47710	.994
		3	.52945	.42830	.604
BMI	1	2	1.37099	1.31256	.723
		3	3.18832*	1.22401	.047
		4	4.49152*	1.16980	.001
	2	1	-1.37099	1.31256	.723
		3	1.81733	1.07146	.327
		4	3.12053*	1.00910	.011
	3	1	-3.18832*	1.22401	.047
		2	-1.81733	1.07146	.327
		4	1.30320	.89088	.461
	4	1	-4.49152*	1.16980	.001
		2	-3.12053*	1.00910	.011
		3	-1.30320	.89088	.461

*. The mean difference is significant at the 0.05 level.

Games-Howell by Food security categories

(1:Food insecurity moderate hunger, 2:Food insecure without hunger, 3:Food secure at risk, 4:Food secure)

Dependent Variable	Food security category	Food security category	Mean	SD	p-value
Positive self-esteem	1	2	-.91273	.49364	.258
		3	-1.57015*	.46260	.006
		4	-2.00936*	.45856	.000
	2	1	.91273	.49364	.258
		3	-.65742	.32878	.193
		4	-1.09663*	.32307	.005
	3	1	1.57015*	.46260	.006
		2	.65742	.32878	.193
		4	-.43921	.27330	.376
	4	1	2.00936*	.45856	.000
		2	1.09663*	.32307	.005
		3	.43921	.27330	.376
Negative self-esteem	1	2	1.39117	.60883	.109
		3	2.57835*	.55248	.000
		4	3.22879*	.53955	.000
	2	1	-1.39117	.60883	.109
		3	1.18718*	.43487	.035
		4	1.83762*	.41832	.000
	3	1	-2.57835*	.55248	.000
		2	-1.18718*	.43487	.035
		4	.65044	.33100	.204
	4	1	-3.22879*	.53955	.000
		2	-1.83762*	.41832	.000
		3	-.65044	.33100	.204

Discrimination	1	2	-1.46130	1.14666	.581
		3	-4.56357*	1.03687	.000
		4	-7.04571*	.97166	.000
	2	1	1.46130	1.14666	.581
		3	-3.10227*	.92076	.005
		4	-5.58442*	.84665	.000
	3	1	4.56357*	1.03687	.000
		2	3.10227*	.92076	.005
		4	-2.48214*	.69071	.002
	4	1	7.04571*	.97166	.000
		2	5.58442*	.84665	.000
		3	2.48214*	.69071	.002
Ethnic identity	1	2	-1.27583	.70168	.272
		3	-.62539	.67365	.790
		4	-1.15484	.66375	.311
	2	1	1.27583	.70168	.272
		3	.65044	.46869	.509
		4	.12099	.45435	.993
	3	1	.62539	.67365	.790
		2	-.65044	.46869	.509
		4	-.52945	.40972	.569
	4	1	1.15484	.66375	.311
		2	-.12099	.45435	.993
		3	.52945	.40972	.569
BMI	1	2	1.37099	1.66261	.843
		3	3.18832	1.49594	.154
		4	4.49152*	1.45350	.016
	2	1	-1.37099	1.66261	.843

		3	1.81733	1.12618	.375
		4	3.12053*	1.06916	.022
	3	1	-3.18832	1.49594	.154
		2	-1.81733	1.12618	.375
		4	1.30320	.78529	.348
	4	1	-4.49152*	1.45350	.016
		2	-3.12053*	1.06916	.022
		3	-1.30320	.78529	.348

*. The mean difference is significant at the 0.05 level.

APPENDIX D

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

Oklahoma State University Institutional Review Board

Date	Wednesday, January 31, 2007	Protocol Expires:	2/14/2007
IRB Application No:	HE0642		
Proposal Title:	Understanding Factors Influencing Body Weight Among Diverse Racial-Ethnic Groups Receiving Food Stamps		
Reviewed and Processed as:	Exempt **Continuation**		

Status Recommended by Reviewer(s) **Approved**

Principal Investigator(s)

Stephany Parker
419 HES
Stillwater, OK 74078

Seung Eun Jung
87 South University Pl. Apt
Stillwater, OK 74075

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

The reviewer(s) had these comments:

Continuation approved for data analysis only. No additional data collection is authorized.

Signature :

Sue C. Jacobs, Chair, Institutional Review Board

Wednesday, January 31, 2007
Date

VITA

Seung Eun Jung

Candidate for the Degree of

Master of Science

Thesis: COMPARISON OF FACTORS INFLUENCING BODY WEIGHT AMONG DIVERSE INDIVIDUALS RECEIVING FOOD STAMPS

Major Field: Nutritional Sciences

Biographical:

Personal Data: Born in Jinju, South Korea, on November 1, 1979, the youngest daughter of Kibok Jung and Kumja Kim.

Education: Received a Bachelor of Science in Nutritional Science from Kyung Hee University, Seoul, Korea in August 2002; Completed the requirements for the Master of Science in Nutritional Sciences at Oklahoma State University, Stillwater, Oklahoma in December, 2008.

Experience: Registered Dietitian in Samsung Everland, Food and Distribution Division, Yongin, Korea 2002-2005; Research Assistant, Oklahoma State University 2006-2008.

Name: Seung Eun Jung Date of Degree: December, 2008

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: COMPARISON OF FACTORS INFLUENCING BODY WEIGHT AMONG DIVERSE INDIVIDUALS RECEIVING FOOD STAMPS

Pages in Study: 156 Candidate for the Degree of Master of Science

Major Field: Nutritional Science

Scope and Method of Study: The purpose of this study was to obtain a greater understanding of factors influencing body weight among diverse racial/ethnic groups receiving Food Stamps. A Random Digit Dial survey was administered to a representative sample of individuals 30-44 years of age who received food stamp benefits from November 2005 to January 2006. Data was obtained from 100 individuals from each racial/ethnic group, namely White, African American, Native American and Hispanic, in the state of Oklahoma. Descriptive statistics were used to summarize demographic data such as age, marriage status, education level, ethnicity, employment, monthly income, and BMI. ANOVA procedures were used to test the null hypothesis that there were no significant differences in means of body satisfaction scores, body image behavior scores, food security scores, and BMI among different racial groups.

Findings and Conclusions: It has been reported that differences in obesity are associated with a significant difference in perception of body image among diverse ethnic groups and that these differences in perceptions of body image affect weight change and weight control. Results from our study indicate few differences when data was analyzed using race as the independent variable. However, more significant differences were found when the data was analyzed using food security status as the independent variable. We posit that ethnic differences are not as evident when individuals share common experiences such as poverty and body weight status. It is possible that being in poverty is a more influential factor on body weight than ethnicity among individuals of limited resources.

ADVISER'S APPROVAL: Dr. Stephany Parker