ATTITUDES ABOUT FOOD

A Thesis

by

NICOLE ALEXIS BAKER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2012

Major Subject: Nutrition

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ABSTRACT

Attitudes about Food. (August 2012)

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Approximately 18% of adolescents are obese. Attitudes about Food is a cross sectional study that seeks to identify lifestyle factors associated with adolescent obesity such as fast food consumption, physical activity, attitudes about fast food, and weight perception. The novel aspect of this study is that it seeks to understand how the respondent perceives the health attitudes and behaviors of their closest friends. Subjects were recruited from four youth organizations for a total of 25 participants between the ages of 12-17 years. Respondents completed a 71 item questionnaire, and height and weight were measured by trained interviewers to calculate BMI. Data were analyzed using the Statistical Package for the Social Sciences (SPSS 19.0), and hypotheses were assessed using correlation coefficients.

Obese respondents were more likely than non-obese participants to consume at least three fast food meals in the last week ($P < .05$). Consuming fast food in the last week of the study was associated with exercising one hour a week or less ($P < .01$). Agreeing that eating fast food is fun was associated with BMI $\geq 85^{th}$ percentile ($P < .01$). Reporting that friends think eating fast food is healthy was associated with eating fast

food three or more times in the last week ($P < .04$) and exercising one hour a week or less ($P < .01$). Individuals who reported exercising at least four days a week were likely to agree with the statements "eating fast food will make me fat" ($P < .03$) and "…will increase total fat" ($p < .05$). Finally, overweight adolescents were more likely to underestimate their weight status compared to normal weight and obese respondents.

These findings indicate a clustering of risk factors for obesity. Frequent fast food consumption and infrequent physical activity were associated in the present study which could tip the scales of energy balance. Health professionals could focus on raising awareness of the overall diet quality of adolescents who frequently consume fast food while encouraging healthy, fun alternatives to fast food. Screening for overweight status and eliciting peer support for healthy eating are key elements in reducing adolescent obesity.

DEDICATION

To my nieces and nephews: Zoe, Reese, Bryce, Callum, Luke, Autumn, and Ethan. May you be inspired to accomplish all that God has created you for. May you have the courage to hope, risk, and, at times, fail. May you know God's never ending love, kindness, and grace to us in Jesus Christ through it all. Your unique lives have touched the deepest parts of my heart. I dedicate this work to you.

ACKNOWLEDGEMENTS

This thesis is much more than an original work of research. It represents courage that triumphs over fear. It represents challenges that strengthen and bring growth. It symbolizes hope that says I can do more than I thought I could.

I have so many people to thank who have helped throughout this journey. Dr. Kubena and Dr. McIntosh, thank you so much for believing in me. Your patience, guidance, and encouragement have kept me on this road. Dr. Kubena, you are a wonderful mentor and person. I am constantly inspired by your hard work, perseverance, and adaptability. Thank you for sharing this journey with me. Dr. McIntosh, thank you so much for your expertise, support, and dedication to this project. Your contribution is invaluable, and I have learned so much from your life and work.

Thank you to my husband, Zach, for your constant love and support. You've persevered with me through this task. I love you. This work is for you.

I would also like to acknowledge my immediate family members: David, Joni, Whitney, and Kristen. Thank you for your confidence and reassurance. My success is your success. And to my gracious in-laws: David, Cheryl, Susan, Deanna, Breanna, Nick, and Colleen. I'm privileged to have inherited a second wonderful family who accepts me as I am.

Finally, this work would not be complete without acknowledging my Lord and Savior, Jesus Christ, who leads me in all things. My example, my hope, and my victory. Thank you for your faithfulness and goodness to me in every moment.

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CHAPTER I

INTRODUCTION

Problem in Children and Adolescents

Child obesity is one of the principal threats to health and well being in the United States today. In fact, the U.S. Surgeon General targeted child obesity prevention as one of her primary initiatives due to obesity's toll on the nation's workforce. Since 1980, the prevalence of obesity among 6-11 year olds tripled increasing from 7% to about 20%.[1,2] This rapid upward trend of child obesity within a few decades is alarming. Currently, around 32% of children aged 2-19 years are considered overweight or obese ($\geq 85^{th}$ percentile BMI for age). Approximately 17% of these children are obese ($\geq 95^{th}$ percentile BMI for age). Among older adolescents aged 12-19 years, about 16% are overweight and 18% are obese.[3] Rates of child obesity seem to have reached a plateau in the last few years. However, national data sets demonstrate a significant positive trend among older obese boys. In short, obese 6-19 year old boys are moving into the highest percentiles of BMI for age ($\geq 97^{th}$ percentile), meaning that the heaviest boys are getting heavier.[3] In addition, the onset of obesity occurs at much younger ages than in the past and is likely to persist into adulthood.[4-6]

Definitions of Child Overweight and Obesity

The World Health Organization (WHO) defines obesity as excessive fat accumulation to the point that it poses a health threat.[7] Obtaining an accurate measure of

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body fat is often difficult, time consuming, and expensive. To date, there is no accepted standard for directly measuring body fatness in children and adolescents.[8] As a result, excess weight for height is used as a proxy for identifying overweight and obesity in both children and adults. Most clinicians use the Body Mass Index (BMI) as an acceptable screening tool for obesity.[9] BMI is calculated using measures of height and weight.

Definitions of overweight and obesity are different in children than in adults. Pediatric overweight and obesity are statistical definitions based on sex and age specific reference values. The Centers for Disease Control and Prevention developed the 2000 CDC growth charts using five national data sets to serve as references for children ages 2 to 19 years. These references account for variability in height and weight as children grow and develop. The 2000 CDC Growth Charts define obesity in the pediatric population as at or above the 95th percentile of BMI for age. Overweight is defined as at or above the 85th percentile BMI for age but less than the 95th percentile.[3,8]

Obesity Related Health Problems

Obesity causes a vast number of health problems, some of which are irreversible and life threatening. Obese children are at increased risk for developing high blood pressure, high cholesterol, fatty liver disease, type 2 diabetes, joint problems, sleep apnea, and metabolic syndrome.[10,11] These conditions used to be considered adult diseases until type 2 diabetes and certain clinical disease markers emerged in obese children. In the Bogalusa Heart Study, 70% of obese children had at least one risk factor for cardiovascular disease while 39% had two or more risk factors.[10] Type 2 diabetes is

one of the primary health threats to obese individuals. About 4.1 in 1000 adolescents live with type 2 diabetes and the prevalence is rising.[11] By 18 years old, obese adolescents have a minimum lifetime diabetes risk of 54.6% which escalates depending on race, gender, and grade of obesity. Severely obese Hispanic females have the greatest lifetime diabetes risk calculated at 86%.[12] Some scientists even predict that life expectancy may decline for the first time in 200 years as a result of the obesity epidemic.[13]

A common myth is that children will grow out of their 'baby fat'. On the contrary, obesity often tracks into adulthood and even becomes more severe with age.[5,6] A closer examination of the Bogalusa Heart Study shows that 84% of obese children were classified as obese in adulthood.[10] This is concerning as some evidence shows that duration of obesity, in addition to severity of obesity, is a risk factor for chronic disease.[12] Furthermore, racial disparities exist in the presence of and persistence of obesity. Significantly higher rates of obese black children remain obese as adults compared to their white and Hispanic counterparts.[10] These disturbing health disparities place black and Hispanic individuals at greater risk of obesity related complications.

Consequences of obesity extend beyond the physical realm into the emotional and mental world of a child. Harassment, discrimination and social exclusion are significant problems faced by obese children and adolescents.[14,15] Teasing among overweight children is significantly associated with disordered eating, low self-esteem, poor body satisfaction, and anxiety to name only a few issues.[14,16] Compared to normal

weight peers, overweight adolescents report lower levels of body satisfaction which is highly correlated with disordered eating attitudes among female adolescents.[17] In the same study, disordered eating attitudes were positively associated with symptoms of depression.[17] It is clear that child obesity must be understood, prevented, and treated as the health implications are serious.

Study Purpose

The purpose of the present study is to examine relationships between adolescent obesity and various health attitudes and behaviors. Specific factors that will be examined include physical activity, fast food consumption, fast food attitudes, and weight perception. The novel aspect of this study is that it seeks to assess friends' attitudes about fast food, weight perception, and level of physical activity. This thesis will contribute to the body of literature that endeavors to understand the attitudes and behaviors associated with obesity in adolescence.

CHAPTER II

LITERATURE REVIEW

Causes of Obesity

Obesity is a disease of excess body fatness that negatively impacts health according to the World Health Organization. At its core, obesity is caused when energy intake exceeds energy expenditure. Several overarching factors contribute to energy imbalance and obesity including genetics, lifestyle factors, and environment. Some estimate that approximately 20% of obesity is influenced by genetic factors alone. An additional 80% of variability is attributed to lifestyle factors such as diet and physical activity. Traits such as race and gender that may put an individual at increased risk of obesity and obesity related complications cannot be changed. This study seeks to identify factors associated with obesity that *can be* modified such as diet, physical activity, and choice of friendships. Studies are inconclusive and sometimes contradictory on the exact relationship of various lifestyle factors in the development of obesity. This work will highlight the relationships between fast food consumption, physical activity, weight perception, and the peer network in the obesity epidemic.

Role of Diet

Researchers have specifically implicated energy dense diets in combination with insufficient physical activity in the obesity epidemic. Longitudinal studies reveal considerable increases in total energy intake among adolescents from 1977 to 2006.[18] These increases in total energy intake have coincided with the escalation in rates of child

obesity. Approximate energy intake among adolescents in 1977 was 1,840 kcals which significantly increased to about 2,020 kcals in 2006.[18] Several dietary culprits dominate the media confusing many Americans as to the root cause and cure of obesity. The cause of child obesity is multifactorial, and significant interactions take place between variables. Although the exact role of diet in the obesity epidemic is complex, this study will focus on fast food consumption. Furthermore, rapid changes in American culture over the previous few decades have altered dietary and food consumption patterns for both children and adults. Increasing disposable incomes and expanding access to food away from home have significantly impacted the composition of the adolescent diet. Needless to say, dietary habits have changed significantly over the last 30 years. Advancements in food production and distribution have altered the nation's food supply and dietary trends. Typical American families have shifted from preparing and consuming most food at home to consuming significant amounts of food away from home. To date, significant quantities of food are being purchased away from home, especially from fast food restaurants.[19,20] The Attitudes about Food study seeks to identify novel relationships between fast food consumption, attitudes about fast food, and weight status. For the present study, an establishment was deemed "fast food" if the restaurant did not employ wait staff.

Food away from Home

In 1999, Americans spent 47.5% of their total food expenditures on food away from home which is a significant increase from 25% of food expenses in 1970.[21] Fast food restaurant use increased 200% between 1977 and 1995 which is the largest increase

of any other food sector including sit-down restaurants.[22] Additionally, the percentage of calories consumed from fast food restaurants has increased significantly over the same time period. Children went from consuming about 2% to 10% of total calories from fast food sources alone.[20] Adolescent boys experienced the most significant increase in calories consumed from fast food starting at 3% in 1977 and increasing to 14% of total calories in 1996.[20] Adolescent girls followed a similar trend as adolescent boys rising from 3% to 11% of total calories consumed from fast food sources in 1996.[20] By 2006, percentage of calories consumed from fast food had risen even higher to approximately 17% of total calories for adolescents.[18] Moreover, the contribution of calories from fast food restaurants represents the highest proportion of calories consumed from food sources prepared outside the home.[18,20]

Fast Food Consumption, Diet Quality, and Nutrient Contribution

Numerous studies reveal significant differences in the diet quality and nutrient intakes of frequent fast food consumers compared to infrequent consumers. Adolescents who consume fast food are less likely to meet dietary recommendations compared to adolescents who do not consume fast food on a regular basis; although, likelihood of meeting dietary recommendations is slim among all adolescents regardless of frequency of consuming fast food.[23]

The Project Eating Among Teens (Project EAT) study found a strong positive relationship between frequency of consuming fast food and selected dietary intakes including total energy, total fat, saturated fat, and percentage of calories from fat.[22] Furthermore, frequency of fast food consumption was negatively associated with intakes

of calcium, fiber, beta-carotene, and Vitamin C.[22] Relationships between fast food consumption and dietary intakes were found to be dose-responsive. Participants with the highest levels of fast food intake had the most significant increases or decreases in the various nutrients outlined above.[22] Participants of the Coronary Artery Risk Development in Young Adults (CARDIA) study reported similar intakes as Project EAT participants. CARDIA participants in the highest group of fast food consumption had lower intakes of fiber as well as higher intakes of total fat, total energy, and saturated fat in comparison to respondents in the lowest category of fast food consumption.[24] The study by Bowman et al is in agreement revealing that children who eat fast food consume significantly higher amounts of total energy, total carbohydrate, fat, and added sugar.[25] Some researchers even estimate that total energy intake is about 40% higher among participants who consume fast food three or more times a week in comparison to participants who do not eat fast food weekly.[22] What is more alarming is that on days when adolescents chose to eat fast food, overweight adolescents consumed significantly more calories than their lean counterparts.[26] This finding indicates that overweight adolescents did not compensate for the extra calories at their next meal like their normal weight peers. The consistent finding of an increase in total energy intake among frequent fast food consumers is a concern. Those who eat high amounts of fast food are at greater risk for tipping the energy balance scales towards weight gain and obesity.

An adolescent's overall eating pattern is affected by fast food consumption as well. Consuming fast food three or more times a week was associated with decreased consumption of fruits, vegetables, and milk.[22] Likewise, consumption of energy dense

foods such as soft drinks, French fries, and cheeseburgers were greater among those who ate fast food at least three times in the last week compared to those who did not eat fast food during the study period[22]. Frequent fast food consumers (≥3 times per week) in the CARDIA study reported higher intakes of refined grains and soft drinks compared to participants who ate fast food infrequently (0-1 times per week).[24] White CARDIA participants in the high category of fast food consumption reported lower intakes of fruits, vegetables, whole grains, and low-fat dairy products than participants in the low category of fast food intake.[24] The study by Bowman et al revealed that children who ate fast food consumed significantly lower amounts of fruits, non-starchy veggies, and milk.[25] These results are consistent with findings from the CARDIA study and Project EAT indicating a poorer diet quality among frequent fast food consumers compared to infrequent fast food users.

Diet quality seems to be affected at lower levels of fast food consumption as well. The study by Paeratakul found that intake of fruits and vegetables was lower among those who consumed only one fast food meal in the last week compared to those who did not eat fast food.[27] On the other hand, Sebastian et al. found fast food consumption to be negatively related to fruit intake but unrelated to vegetable intake.[23] Overall, the evidence reveals a compromised diet quality among adolescents who consume fast food frequently.

Fast Food, Weight Status, and Weight Gain

To date, no direct cause and effect relationship has been consistently established between fast food consumption and adolescent obesity. Several studies outline the

compromised diet quality associated with frequent fast food use; however, results are mixed when examining fast food's contribution to weight status and weight gain. A few studies have documented significant increases in BMI among those who frequently consume fast food while other studies are inconclusive or even contradictory. Study design could play a role in these inconsistent findings, and the use of self-reported height and weight often underestimate BMI and weight status.[28,29] In general, the most pronounced effects of fast food consumption on weight gain and weight status are seen at the highest levels of consumption compared to the occasional purchase of fast food.

Two longitudinal studies reveal that frequent consumers of fast food experienced greater increases in energy intake and BMI compared to infrequent consumers.[21,26] A study examining 15 year weight gain showed that frequent consumers of fast food (defined as $\geq$ 2 times per week) gained 10 pounds more than those who ate fast food less often.[24] The National Longitudinal Study of Adolescent Health (ADD health) is in agreement showing that adolescents who consumed high amounts of fast food had greater increases in body weight when measured five years later compared to those who ate fast food infrequently at baseline.[30] On the contrary, one major study demonstrated significant increases in caloric intake but not in BMI among children who consumed fast food.[25] This could be due to the increased caloric needs in childhood needed to sustain growth and development. Insulin resistance as well as weight gain were greater among participants who consumed fast food at least three times a week at both baseline and follow-up compared to participants who did not consume fast food on a weekly basis.[24] Furthermore, adolescents who consumed fast food weekly exhibited more metabolic and

cardiovascular risk factors than adolescents who did not consume fast food as often.[19] Overall these studies indicate a slow but significant trajectory towards weight gain in adulthood when fast food consumption is elevated in adolescence.

Moreover, percent body fat was significantly higher in adolescents who consumed fast food weekly compared to those who did not eat fast food on a weekly basis.[19] Participants were nearly twice as likely to be overweight or obese if their families purchased fast food for dinner on a weekly basis compared to families who did not purchase fast food weekly.[19] Contrary to these findings, French et al found no relationship between obesity and fast food consumption.[22] Even more surprising, adolescent males who consumed three or more fast food meals per week had significantly lower BMI's than males who consumed fast food less often.[22] The jury is still out as to whether or not there is a direct cause and effect relationship with fast food and obesity. However, it is safe to say that frequent consumption of fast food is a risk factor for weight gain and potentially obesity. It is for this reason that fast food was chosen as a study factor in the Attitudes about Food project. Adolescence is an important time to discuss the impact of fast food consumption on energy intake and diet quality. In addition, adolescents might need help identifying healthy options at fast food restaurants as well awareness of convenient and healthy alternatives to fast food.

Fast Food Frequency

High proportions of adolescents consume fast food which is alarming considering the diminished diet quality and increased energy intake among frequent consumers. On average, adolescents consume fast food two days a week.[30]

Consumption becomes more frequent in young adulthood at approximately two and half days per week.[30] Although, this number might be higher since some studies indicate that frequency of fast food consumption among adolescents is underreported.[31] About 75% of a sample of 5,000 adolescents reported consuming fast food in the previous week of the study.[22] More females (about 27%) report no fast food consumption compared to their male counterparts (about 23%).[22] Among males, those in grades 9-12 are more likely to eat fast food at least three times in a week compared to males in 7th and 8th grades.[22] It is possible that older boys have more disposable income as well as greater capability to travel to fast food restaurants compared to younger boys. Among young adults, the CARDIA researchers observed that frequency of consuming fast food was higher among two specific groups including black people and men as compared to white people and women.[24]

The Project EAT study reported on longitudinal trends in fast food consumption during critical transition periods including early adolescence to middle adolescence as well as from middle adolescence to young adulthood. These researchers found that frequent fast food consumption (≥3 times per week) among males rose significantly from about 24% in middle adolescence to 33% in young adulthood.[32] However, this same trend was not significant among female study participants who transitioned to adulthood. Females reported much smaller increases in frequent fast food consumption, rising slightly from about 21% to 23% of female respondents at follow-up.[32] Most striking was the increase in frequent fast food consumption from early to middle adolescence. Proportions of adolescents consuming three or more fast food meals in a

week nearly doubled from early to middle adolescence among both males and females.[33] Differences by gender were minimal. Frequent fast food consumption among males increased from about 17% in early adolescence to about 30% when surveyed five years later during middle adolescence.[33] Among females surveyed, approximately 16% consumed fast food frequently in early adolescence which increased to around 27% in middle adolescence.[33]

Fast food consumption has also been associated with other behaviors and characteristics. Males who reported high amounts of fast food consumption also reported involvement in more team sports compared to those who reported no fast food consumption.[22] More involvement in team sports could be one reason why male fast food users have lower BMIs than infrequent fast food users. Furthermore, amount of time spent in front of the TV was positively associated with frequency of fast food consumption.[22] Unlike those in the low category of fast food intake, white participants in the high category shared similar attributes including lower levels of education, more time spent in front of the television, and lower amounts of physical activity.[24] Most studies, however, show significant relationships between fast food consumption and decreased levels of physical activity. Fast food consumption could be a risk factor that clusters with other behaviors such as inactivity that place adolescents at risk for energy imbalance.

Attitudes about Fast Food

Researchers have investigated attitudes about fast food and healthy eating. Many studies are in agreement about attitudes that promote and hinder fast food consumption.

For example, adolescents who reported high amounts of fast food consumption shared similar attitudes about eating healthy foods including that healthy foods taste bad, they don't have time to eat them, and they don't care about eating healthy.[22] Females who perceived benefits to eating healthy foods ate less fast food compared to females who perceived no benefit to eating healthy foods. Likewise, females who reported having good health ate fast food less often than females who perceived themselves to have poorer health.[22] Participants who ate fast food three or more times reported lower amounts of concern about their health than participants who ate fast food less often.[22] Frequent consumers of fast food reported selecting fast food mostly because fast food restaurants are quick, convenient, tasty, and inexpensive.[34] On the contrary, the study by Dunn et al found that cost was a factor that hindered fast food consumption.[31] Furthermore, Dunn reported that satisfaction from fast food as well as cravings and minimal free time all promoted fast food consumption while concern about weight, health, and missing out on family meal times discouraged consumption.[31] Additional impeding factors included feelings of confidence in one's ability to avoid fast food, guilt about fast food consumption, and identification as a healthy eater.[31] One Australian adolescent study found that attitudes strongly predicted intention to eat fast food but only when study participants did not consider themselves to be healthy eaters.[31] In turn, these researchers found that intention to consume fast food was predictive of actual behavior.[31]

Physical Activity

Physical activity is a factor that contributes to energy balance, and sedentary behaviors such as screen time are risk factors for obesity. Current guidelines

recommend that children and adolescents exercise for at least 60 minutes every day. Most activity should be moderate-intensity and vigorous-intensity aerobic activity.[35] Many studies agree that meeting physical activity guidelines is associated with a normal BMI.[36,37] Unfortunately, the likelihood of meeting recommendations declines as students get older.[38] The study by Driskell et al investigating target behaviors in children and adolescents found that fewer high school students met physical activity recommendations than middle school or elementary students. Only 37% of high school students met physical activity recommendations compared to 65% of elementary students.[38] Additionally, high school students are less likely to meet fruit and vegetable recommendations compared to younger students. This combination of behavior factors puts high school students at greater risk for energy imbalance and, potentially, obesity. Levels of physical activity have been shown to vary significantly by weight status as well. Some findings show that greater proportions of normal weight adolescents meet physical activity guidelines than overweight and obese adolescents.[17,37,38]

The Project HeartBeat! study discovered an inverse association between moderate to vigorous intensity physical activity and fat mass index (FMI) in adolescents which indicates that the most active adolescents were also the leanest.[36] Contrary to expectations, these researchers did not find any significant relationship between FMI and sedentary behaviors.[36] However, other studies indicate small yearly BMI gains among overweight girls who spend increasing amounts of time engaged in sedentary behaviors.[39] In the study by Patrick et al sedentary behavior was associated with overweight status among boys but not among girls.[37] Increasing amount of physical

activity over a one year time period was associated with decreases in BMI. This effect was more pronounced among overweight and obese adolescents who increased physical activity levels compared to their normal weight peers.[39]

Weight Perception

Weight perception is a driving force behind weight related behaviors. Large proportions of adolescents misperceive their weight status. Individuals are more likely to underestimate rather than overestimate their weight status. Overweight and obese adolescents who do not accurately recognize their status are less likely to engage in healthy weight control practices compared to adolescents who identify their excess weight.[40] Likewise, normal weight adolescents with a false perception of being overweight are at risk for disordered eating such as anorexia nervosa and bulimia. Therefore, it is important for individuals to accurately perceive their weight status as perception is closely tied to behavior. Overweight and obese adolescents must accurately perceive their weight status and understand the associated health risks as the consequences of obesity are severe and long lasting. Likewise, perceiving self as obese when, in actuality, the individual is not obese can lead to disordered eating patterns.

The study by Brener et al found that less than one quarter (about 24%) of overweight adolescents correctly identified themselves as overweight.[28] The other 76% of overweight participants underestimated their weight status.[28] Greater proportions, about 54%, of obese adolescents correctly identified excess weight while the remaining 46% underestimated their weight status.[28] Overweight children are more likely to misperceive their weight status than normal weight children, but misperception is still a

problem among normal weight adolescents.[41] About 43% of normal weight adolescents underestimated while about 6% overestimated their weight status.[28] One possibility for such high proportions of underestimating weight status could be due to the rising rates of obesity. Children might be desensitized to their own weight status since the average weight of their peers has steadily increased in the last few decades. In fact, Maximova et al found that exposure to obesity at school was a strong predictor of weight misperception.[41] Greater proportions of children underestimated their weight status when the school's mean BMI was higher compared to schools with lower mean BMIs.[41]

Misperception occurs in higher proportions among certain races and genders. Overweight black girls are more likely than overweight white girls to underestimate their weight status.[28,42] Some researchers report that the ideal body size for black girls is larger than the ideal body size for white girls which could play a role in underestimating weight status.[42] Additionally, similar proportions of black girls and white girls want to stay the same weight; however, the mean BMI percentile for black girls who want to stay the same weight is higher than the mean for white girls.[43] The mean BMI percentile for black girls who were satisfied with their current weight was at the 75th percentile BMI for age whereas the mean for white girls was at the 56th percentile.[43] The 75th percentile approaches the cutoff value for overweight adolescents which could be why more black girls underestimate their weight status than white girls.

Role of Peers and the Social Network

As children transition into adolescence, parental influence decreases while susceptibility to peer influence increases .[44] Little is known about the connection

between the peer network, adolescent eating patterns, and the development of obesity, although recent research is beginning to examine these relationships. One large longitudinal adult study documented the spread of obesity within a social network.[45] New adolescent studies identify similar patterns and trends. For example, BMI of adolescent respondents and BMI of their friends are positively correlated indicating that like sticks with like.[46,47] The clustering of friends with similar BMIs is most evident among obese adolescents compared to normal weight peers.[48] It is unclear if obese youth cause their friends to become obese or if they tend to attract friends who are already obese. Adult data shows that risk of obesity increases significantly with the presence of obese friends; however, adolescent data is not as clear, and causal relationships have yet to be proven.[45] Likewise, the odds of an overweight adolescent having an overweight friend is double that of a normal weight individual.[49] Furthermore, overweight students are elected as friends less often and are generally less popular than normal weight peers.[15,48] This coincides with other studies that highlight social marginalization of overweight and obese youth especially among females.[50] Overweight youth might select other overweight youth as friends because of social exclusion by normal weight peers.

Some evidence suggests that adolescent friends share similar behaviors that affect energy balance. For example, both male and female friends display similar patterns of organized physical activity.[51] Female friends report similar amounts of time spent using the internet and playing video or internet games.[51] Boys, however, are more similar in their consumption of high calorie foods including energy-dense drinks, fast

food, and sweet snacks.[51] Adolescents in another study reported that both friends and family members influenced them to eat fast food.[31] On the contrary, other researchers found that parental support was not a significant factor associated with fast food consumption thus reemphasizing the important role of peers in food selection.[32] Participants who ate high amounts of fast food (3+ meals per week) were more likely to report that their friends were not concerned about eating healthy compared to participants who ate less fast food.[22] In a similar manner, participants of Project EAT who perceived high levels of peer support for healthy eating consumed less fast food than participants who perceived minimal or no peer support for healthy eating.[32] Interestingly, fast food consumption and popularity were positively correlated.[48] In a qualitative study, adolescents reported that healthy lunches were for unpopular people and bringing healthy food to school would elicit ridicule from classmates.[52] In addition, study participants stated that popular adolescents select name brand and high fat foods for lunch which is similar to the lunch they described for an unhealthy person.[52] Overall, food choice was highly regulated by the desire for approval and acceptance by peers at school.[52] However, the study by Salvy found that when adolescent females ate a meal with friends, they consumed more healthy food and less unhealthy food than when they ate with their mothers.[53] One theory is that females want to make a good impression and keep up the appearance of healthy eating with other girls. Social pressure to be thin could play a role in this behavior as well. Males, on the other hand, ate about the same amount of unhealthy food regardless of who accompanied them.[53]

A second study by Salvy et al. examined snack intake in the presence of friends and in the presence of acquaintances. Each study participant was given two nutrient dense and two energy dense snacks and was instructed to eat at will. Energy intake was significantly higher when eating with a friend compared to eating with an acquaintance.[54] Furthermore, pairs of male friends ate a greater amount of energy-dense snacks than pairs of female friends.[54] Type and quantity of snack intake varied by weight status as well as gender. Compared to all other partner combinations, two overweight partners ate more snacks and had a higher total energy intake.[54] Salvy found the same results in a comparable study conducted among pre-adolescent females.[55] When a normal weight participant was paired with an overweight partner, the normal weight participant ate fewer energy-dense snacks than when he or she was paired with another normal weight partner.[54] Pairs of overweight friends had the highest snack intake of all partner combinations with a mean intake of 738 kcals.[54] However, non-overweight participants paired with an overweight acquaintance had the lowest snack intake with a mean consumption of 216 kcals.[54] One theory in the difference in snack intake is that friends give each other "permission" to eat more freely which increases food intake. Acquaintances might be more concerned about leaving a good impression, and therefore, might be prone to limit food intake. This study shows that weight status as well as familiarity influence food intake. Although studies differ on the amount of influence exerted by peers, the evidence is clear that peers do play an important role in food selection and intake during adolescence.[52,53]

Purpose, Objectives, and Hypothesis

Prevention and treatment of child obesity requires a clear understanding of the problem. This study seeks to contribute to the body of literature on adolescent obesity. While much is known about child obesity, gaps in the literature still remain. More research is needed to determine if and how an adolescent's peer network relates to obesity. Additionally, the 'Attitudes about Food' study will examine relationships between fast food consumption, attitudes about fast food, weight status, physical activity, weight perception, family influences, and the peer network. Analyses that examine these are exploratory in nature.

However, some of the analyses are based on hypotheses drawn from the literature. It is hypothesized that a weight status of obese will be associated with consumption of two or more fast food meals in the last week, exercising less than one day per week, and a higher score on the fast food attitudes index. Another hypothesis is that more overweight and obese adolescents will misperceive their weight status compared to normal weight peers. Finally, it is predicted that obese adolescents will elect more overweight friends than respondents who are normal weight.

CHAPTER III

MATERIALS AND METHODS

Project Funding and Approval

The Attitudes About Food study was funded by the Institute for Obesity Research and Program Evaluation. The Institutional Review Board of Texas A&M University approved the study in April of 2009, and data was collected between June 2009 and May 2010.

Sample

Subjects of the Attitudes about Food project were recruited from four youth organizations in Brazos County including the Boy Scouts, the Girl Scouts, the Boys and Girls Club, and the Teen Center. Individuals involved in one of these organizations between the ages of 12 and 17 years qualified for enrollment in the study. This age group was selected due to evidence showing that peer influence is greatest in early adolescence.[56]

Recruitment occurred in-person during regularly scheduled organization meetings from June 2009 to May 2010. Youth organization policies prohibited the principal investigator from contacting organization members outside of regularly scheduled events. Potential participants were informed about their rights as a research subject and were given a parental consent form, child assent form, and information sheet. The parent consent form and child assent form were gathered prior to collecting data.

Thirty-one adolescents volunteered to join the Attitudes about Food study. Five subjects were excluded as they did not meet the minimum age requirement. One additional subject did not complete the questionnaire and so was excluded from the study sample. As a result, the study sample included 25 total subjects. The sample consisted of thirteen males (52%) and twelve females (48%). In addition, 44% of participants considered themselves white, 44% African American, 4% multi-racial, and 8% selected the "other" response. No participant reported a Hispanic or Asian ethnic background.

Boy Scouts

Recruitment of participants involved in the Boy Scouts was mediated through the Arrowmoon District Director. Due to Boy Scout policy, the principal investigator could not contact Boy Scout participants directly. However, the PI was invited to attend two troop leader meetings in order to inform leaders of the opportunity to participate in the study. Troop leaders were asked to contact the PI if they were interested in allowing their troop to join the study. After being contacted by a troop leader, the PI set up a time to attend a troop meeting in order to inform scouts about the study and recruit their involvement. Potential participants were given an information sheet, parent consent form, and child assent form. Later, the PI collected consent and assent forms and issued the questionnaire as well as completed anthropometric measurements. A total of six subjects were recruited from this group.

Girl Scouts

Recruitment of participants involved in the Girl Scouts was mediated through the Girl Scout Program Specialist. Due to Girl Scout policy, the principal investigator could not contact Girl Scout participants or troop leaders directly. However, the PI was invited to attend troop leader meetings in order to inform leaders of the opportunity to participate in the study. Troop leaders were asked to contact the PI if they were interested in allowing their troop to join the study. After being contacted by a troop leader, the PI set up a time to attend the troop's meeting in order to inform participants about the study and recruit their involvement. Potential participants were given an information sheet, parent consent form, and child assent form. Later, the PI collected consent and assent forms and issued the questionnaire. After completing the questionnaire, the research team measured the height, weight, and waste circumference of the research participant. A total of seven subjects were recruited from this group.

Teen Center

The PI also collected data from the Teen Center, an afterschool program for middle school aged students. The PI worked closely with the Teen Center Director to schedule recruitment times. Members of the Teen Center were informed of the study during a group meeting. Students were given an information sheet as well as the parent consent form and child assent form. A total of five subjects were recruited from this group.

Boys and Girls Club

Participants were recruited from two different locations of the Boys and Girls Club. The PI gathered potential subjects into smaller groups and informed each group about the study as well as their rights as a human subject in research. In return for recruiting at the Boys and Girls Club, the PI offered free educational lessons based on the curriculum "Healthy Habits". The topics included portion sizes, MyPyramid, and breakfast so as not to interfere with the main topics of the study. A total of seven subjects were recruited from this group.

Incentives

Participants who enrolled in the study after November 20, 2009 qualified to enter a random drawing for an incentive package. The incentive package, valued at $35, included a $25 gift card at a local mall and two coupons for free or reduced items at nearby foodservices. Eight participants, 32% of the sample, qualified for the incentive package drawing. Incentives were distributed in July of 2010. No incentives were offered prior to November 20, 2009.

Questionnaire

The Attitudes about Food questionnaire contains 71 items that cover topics such as weight perception, physical activity, the peer network, attitudes about fast food, and consumption of fast food within a week of the study. Portions of the questionnaire were adapted from the Project Eat-I (Eating Among Teens) study designed to asses adolescent eating patterns and weight concerns. More than 4700 middle and high school adolescents completed the Project Eat-I survey. Additionally, some questions about

dieting and frequency of fast food consumption were modified from the Youth Risk Behavior Surveillance System (YRBSS) survey instrument. Prior studies have shown the YRBSS survey to be a reliable instrument among middle and high school aged students[57,58]. Sample questions include, "what are you currently trying to do about your weight?", "How often do you exercise so much that you get out of breath or sweat?", "How do you describe your weight?", and "who are your closest friends?". [59,60]

Figure Rating Scales

Current body size and ideal body size were assessed using the Stunkard Figure Rating Scales (FRS) developed by Stunkard et al. The FRS is a series of gender specific body figures ranging from underweight to obese and is highly correlated with BMI percentiles.[41] Both the female and male FRS contain a selection of seven body figures. John Wiley & Sons, Inc. granted permission to use the FRS as part of the Attitudes about Food study.

Weight Perception

To determine perceived weight status, subjects were first asked to select the body figure that looks most like them using the Stunkard FRS. The figure's BMI was then compared with the participant's actual BMI calculated using height and weight measures. The resulting difference between the participant's actual BMI and perceived BMI gives a misperception score. Accurately assessing weight status is an important cue for action in both adults and adolescents. Overweight adolescents who do not perceive themselves as overweight are less likely to engage in behaviors to lose or maintain weight. On the other hand, overweight adolescents who accurately perceive their weight

status are more likely to report exercising and eating less to control weight.[40] The novel aspect of this study is that participants were asked to select the figure that looks most like each of their five closest friends. This data was used to assess perceived exposure to obesity in the peer network.

Ideal Body Weight

Additionally, subjects were asked to select the figure that they would like to look like as a means to ascertain ideal weight status. The difference between current weight and ideal weight status gave a discrepancy score (current – ideal). The discrepancy score, in turn, was used as a measure of body dissatisfaction.[61] Body dissatisfaction is associated with disordered eating behavior and depression, especially in white adolescent females.[62]

Anthropometry

Anthropometric measures obtained during this study include height, weight, and waist circumference. Measurements were collected according to the standardized procedures outlined by Lohman et al. after completion of the Attitudes about Food Questionnaire.[63] Height and weight measures were used to calculate body mass index (BMI). BMI is an acceptable screening tool for identifying overweight and obesity in children and adolescents.[64] The 2000 Centers for Disease Control and Prevention (CDC) Growth Charts define obesity in the pediatric population as at or above the 95th percentile of BMI for age. Overweight is defined as at or above the 85th percentile BMI for age but less than the 95th percentile.[8] BMI percentiles for each subject were determined using the Children's BMI Group Calculator developed by the CDC.

A Seca 214 Portable Stadiometer was used to measure the height of participants. Subjects stood barefoot with weight evenly distributed on both feet and head in a horizontal plane. Heels remained together while the heels, buttocks, and scapulae touched the vertical board. Subjects were asked to inhale deeply while the vertical board was lowered to the most superior part of the head. Measurements were repeated 2 times and recorded to the nearest 0.1 cm. The average height was used in the BMI calculation.

A Seca Robusta 813 High Capacity Digital Floor Scale was used to weigh participants to the nearest 0.1 kg. Subjects were weighed in light clothing without shoes and weight distributed evenly. Weight was measured three times, and the average of the three measurements was used to calculate BMI.

Waist circumference was measured privately by two trained researchers using a cloth tape measure. Subjects were asked to lift their shirt high enough for the investigator to identify the narrowest part of the waist between the ribs and iliac crest. The zero end of the tape measure was held in the investigators left hand while a second assistant took the rest of the tape measure and positioned the tape in a horizontal plane around the back of the participant. Subjects then stood with arms to the side and feet together. At the end of a normal expiration, waist circumference was measured to the nearest 0.1 cm. Waist circumference was taken until three measurements were within 0.5 cm of each other.

Data Analysis

Attitudes about Food data was analyzed using the Statistical Package for the Social Sciences (SPSS 19.0). Response categories were collapsed to better capture

frequency of the study factors. Frequency of consuming fast food and discussing weight were collapsed into three response categories: zero times, one to two times, and three or more times in the last week of the study. These response categories are consistent with other studies that have examined fast food consumption such as Project EAT.[32] Likewise, physical activity was collapsed into four different categories including those who engage in physical activity: daily, four to six days per week, two to three days per week, and one day a week or less. A related question assessed hours of physical activity each week. These responses were collapsed to represent those who exercise: seven hours a week or more, four to six hours per week, two to three hours per week, and one hour per week or less. Hypotheses were assessed by use of correlation coefficients.

Study Origins and Recruitment Barriers

Prior to recruitment and data collection, the research team scouted out local school districts in order to form partnerships with the Attitudes about Food research team. School districts in the immediate area were saturated with research studies, so the search expanded to suburbs of Houston, Texas. Discussions with foodservice directors and administrative personnel in the Houston area seemed promising but ultimately did not end in a research partnership due to district time constraints and competing priorities. As a result, the PI began contacting local after school programs and youth organizations that served adolescents in the desired age range of 12-17 years.

Local organizations responded more readily to the request for research partnerships. The Boy Scouts of America was the first group to agree to a partnership with the Attitudes about Food team. The district leader reiterated the organization's

emphasis on service to the community, and plans for data collection were discussed. However, Boy Scout policies prevented the PI from recruiting adolescents directly which was the main recruitment barrier. All recruitment was mediated through troop leaders who did not seem interested in committing their scouts to an additional project. Furthermore, the district leader sent out several emails to the scout leaders including a brief description of the research opportunity and the PI's contact information. After the PI attended two troop leader meetings, one troop decided to participate in the research. As a result, six adolescent boys enrolled in the study. No additional troops decided to participate, and little interested was generated in the project.

Similar experiences occurred with the local chapter of the Girl Scouts of America who had the same policy limiting direct contact with adolescent members. The district leader seemed willing and eager to get involved with the study, but troop leaders appeared overtaxed and disinterested in adding another project to their agenda with little return for the adolescent girls. As a result, the district leader suggested hosting a health fair for the girl scouts which would incorporate participation in Attitudes about Food. Few troop leaders responded to the idea, and coordinating schedules was a problem. Ultimately, two troop leaders contacted the PI personally which resulted in enrolling seven adolescent females in the study.

Leaders of the Boys and Girls Club were the next targets for partnership. The Boys and Girls Club leadership eagerly allowed the PI to recruit subjects from their summer and after school programs. The PI was allowed to come and go as needed in order to explain the project to adolescents and recruit additional participants. However,

it appeared that many of the Boys and Girls Club members were more interested in talking with friends, playing video games, playing sports, and relaxing after school than participating in the survey. Lack of interest and the desire to unwind from the school day were major barriers to participation. Additionally, adolescents who were interested in joining the study cited that they lost or forgot to bring back permission forms. Overall, adolescents from this organization gave the impression that they did not take the study seriously since it was not administered through their school. After addition of the incentives, Boys and Girls Club participants seemed more motivated to return their permission forms. It was observed that permission forms were returned more promptly once a monetary incentive was involved.

The final research partnership formed between the Attitudes about Food team and the Teen Center, an afterschool program. The Teen Center served over 100 adolescents at the time of the study, but the population changed from day to day. Some adolescents were consistent in their membership while others attended irregularly. Variations in attendance were major barriers to recruitment and participation in the study. The Teen Center atmosphere was loud and boisterous. Adolescents had a difficult time focusing to learn about the study and requirements for enrollment. It appeared that the priority for these adolescents was to have fun and unwind from the long school day which was another barrier for recruitment. A total of five adolescents from the Teen Center completed the study.

CHAPTER IV

RESULTS

Demographic Variables

Table A-1 displays demographic characteristics of study participants. Twenty-five adolescents between the ages of 12-17 years enrolled in the Attitudes about Food study. The sample consisted of 13 males (52%) and 12 females (48%). The mean age of study participants was 14.4 years. Approximately 68% of the sample had a normal BMI while 16% were classified as overweight and 16% obese. Most of the respondents considered themselves to be either white (44%) or African American (44%). The remaining respondents reported being multi-racial (4%) or of other origin (8%). None reported being Hispanic or Asian.

Weight Status

As stated above, approximately 16% of the Attitudes about Food sample were overweight and 16% obese. Proportions of obesity varied by the participant's race and gender. Among obese respondents, 75% said they were African American while the remaining 25% said they were White (Table A-2). Similarly, 75% of overweight respondents were African American and the other 25% of overweight respondents said they were multi-racial. Out of normal weight participants, 59% were White, 29% were African American, and 12% said their race was "other". The prevalence of obesity was 27% for African American respondents and 9% for White respondents.

Weight status varied by gender as well. Disproportionate amounts of females were overweight compared to males while equal proportions of males and females were

obese. Approximately 75% of overweight respondents were female while the remaining 25% were male (Table A-3). The prevalence of obesity was 17% among females and 15% among males. Additionally, 77% of males were normal weight while only 58% of females were normal weight.

Weight status of obese was correlated with various survey responses. For example, obese individuals were more likely to describe themselves as very overweight compared to their non-obese counterparts ($P < .001$) (Table A-6). In addition, obese adolescents reported discussing weight with family members more frequently than overweight and normal weight peers ($P < .01$) (Table A-15). Also, weight status of obese was significantly associated with trying to lose weight ($P < .001$) (Table A-9). Individuals who reported that they were trying to lose weight discussed weight with family members more often than those who were not trying to lose weight ($P < .05$).

Overall, obese participants consumed fast food more often than non-obese participants ($P < .02$). More specifically, obese respondents were more likely to consume at least three fast food meals in the last week compared to their non-obese counterparts who reported eating fast food less often ($P < .05$) (Table A-18). This supports the hypothesis that obese participants would consume a greater amount of fast food than normal weight and overweight participants. Additionally, obese respondents consumed fast food with family more often than their peers ($P < .03$) (Table A-24).

Weight Perception

Current and ideal body image were determined through use of the Stunkard Figure Rating Scales (FRS) and are displayed in Table A-56 as well as Figure A-23 and

Figure A-24. Responses varied by gender. Mean current body size for males was 3.36 on the FRS. Ideal body image for males was larger than their current body size. Their mean ideal body size was 3.73 on the FRS. Females, on the other hand, selected a mean current body size of 3.95 and a lower ideal body image at 3.73 on the FRS. In general, females wanted to be smaller than their current size whereas males wanted to be larger than their current size. Males had a greater discrepancy than females between their actual and ideal body size. The mean female ideal was only 0.23 units away from their actual body size compared to 0.37 units different for males. Mean ideal body image was the same for males as it was for females at 3.73 on the FRS which is within the normal weight range.

Weight misperception was assessed by calculating the difference between z-scores for both actual BMI and perceived body size (from the Stunkard FRS). The mean misperception scores for normal weight, overweight and obese adolescents were 0.02, -0.23, and 0.15, respectively. There was no significant correlation between weight status and misperception score. Most participants were able to accurately identify their weight status using the Stunkard FRS. Overweight adolescents had the greatest amount of misperception compared to normal weight and obese participants although their misperception score was not statistically significant.

Approximately 60% of the sample described themselves as about the right weight, 16% as slightly overweight, and 8% as very overweight. Most participants accurately perceived their weight status. No Attitudes about Food participant overestimated their weight status. However, there was a notable amount of

underestimating weight status. For example, 50% of overweight adolescents perceived themselves as about the right weight (Figure A-22). Among normal weight participants, 24% reported that they were slightly underweight. No obese participants underestimated their weight status. This disproves the original hypothesis that more overweight and obese adolescents would misperceive their weight status compared to normal weight participants. A greater percentage of overweight participants misperceived their weight status compared to normal weight participants. However, this trend did not hold true for obese participants who all accurately perceived their weight status.

Unlike normal weight participants, overweight and obese respondents were more likely to report that they view themselves as slightly overweight or very overweight ($P < .001$) and that they are currently trying to lose weight ($P < .01$). On the other hand, having a normal BMI was significantly associated with describing self as about the right weight ($P < .02$) (Table A-4). Roughly 28% of the sample reported that they are trying to lose weight.

Regardless of actual weight status, perceiving self as either slightly overweight or very overweight was significantly correlated with trying to lose weight ($P < .001$) (Tables A-32; A-33; A-38). Compared to those who view themselves as about the right weight, those who considered themselves slightly or very overweight were more likely to eat fast food with family members ($P < .03$), consume three or more fast food meals in the last week ($P < .04$), and agree that eating fast food is fun ($P < .04$).

Weight Discussions with Peers and Family

Approximately 26% of the sample reported that they discussed how food affects their weight with their friends in the last week of the study. Roughly 16% of the sample discussed their weight with friends a minimum of three times. Another 33% reported that they discussed how food affects their weight with family members. About 12% of the sample discussed weight with family at least three times.

Perceiving self as slightly or very overweight was significantly correlated with discussing weight with family ($P < .02$). Individuals who discussed weight with family members were more likely to report that they exercised daily compared to respondents who did not discuss weight with family ($P < .01$). Furthermore, discussing weight with family was significantly associated with discussing weight with friends ($P < .05$).

Fast Food Consumption

Over three quarters of the Attitudes about Food sample (80%) consumed food prepared at a fast food restaurant during the last week of the study. About one third of the sample (32%) consumed fast food on three or more occasions. When asked with whom they ate fast food, approximately 44% said they ate fast food with friends and 68% said they ate fast food with family members.

Frequency of consuming fast food in the last week varied by weight status. Normal weight and overweight adolescents consumed fast food approximately 1.4 and 1.8 times respectively. Obese adolescents consumed fast food more often in the last week than their non-obese counterparts with a mean of 3.5 times. Greater proportions of

obese individuals (75%) compared to normal weight (24%) and overweight (25%) respondents reported consuming fast food three or more times in the last week.

As overall frequency of consuming fast food increased, so did frequency of discussing weight with family members ($P < .05$). Specifically, consuming fast food three or more times in the last week was significantly associated with discussing weight with family members ($P < .01$). Likewise, frequency of discussing weight with family and eating fast food with family were significantly associated events ($P < .04$). Those who ate fast food frequently compared to those who did not eat fast food were more likely to agree that fast food tastes good ($P < .05$) and is fun ($P < .05$). Similarly, individuals who reported eating fast food with friends on several occasions in the last week were more likely to agree that eating fast food is fun compared to those who did not eat fast food with friends ($P < .05$). Individuals who did not eat fast food in the last week of the study were more likely to disagree that fast food tastes good ($P < .05$), is fun ($P < .01$), and saves time ($P < .01$) compared to individuals who reported consuming fast food at least once.

Fast Food Attitudes

When asked how much they agreed or disagreed with a series of attitudes about fast food, study participants responded with diverse answers. Varying percentages of participants agreed or strongly agreed that eating fast food tastes good (80%), is easy to get to (68%), increases total fat (64%), saves time (52%), is a way of hanging out with friends (36%), and is fun (20%) (Figures A-4 to A-14). Affirmative responses to these attitudes were added to give a fast food attitudes index score for each participant.

Weight status was not significantly associated with a higher score on the fast food attitudes index. This finding thus provides no support for the original hypothesis that weight status of obese would be significantly related to a higher score on the fast food attitudes index.

Agreeing that eating fast food is fun was significantly associated with those who had a BMI $\geq 85^{th}$ percentile ($P < .01$) (Table A-26, A-27). About 36% indicated that fast food is cheap which is similar to the proportion who disagreed (40%). Only 20% considered fast food to be healthy. While 48% agreed that eating fast food will make them get fat, a sizeable amount, around 32%, disagreed.

Furthermore, agreeing that fast food is fun went along with thinking that fast food is healthy ($P < .01$). Individuals who agreed that eating fast food is fun reported lower amounts of exercise than those who disagreed or were neutral about the entertainment value of fast food. In fact, agreeing that fast food is fun was associated with exercising one day a week or less ($P < .02$) for one hour a week or less ($P < .001$). Agreeing that fast food is healthy was associated with discussing weight with family members ($P < .04$).

Physical Activity

Weight status was not significantly associated with frequency of physical activity. This disproves the hypothesis that obese adolescents are more likely to exercise one day a week or less compared to overweight and normal weight participants. About 20% of participants reported exercising one day a week or less while 28% reported that they exercised daily.

Various other study factors were associated with frequency of physical activity. Consuming fast food in the last week of the study was significantly associated with exercising one hour a week or less ($P < .01$). In a similar manner, those who reported consuming fast food with friends were more likely to report exercising one hour a week or less compared to those who did not eat fast food with friends ($P < .001$). Individuals who reported exercising at least four days a week were more likely to agree with the statements eating fast food will make me fat ($P < .03$) and will increase total fat ($P < .05$) compared to participants who exercised less often.

Peer Network

Participants were asked to evaluate the body size, fast food attitudes, and frequency of physical activity for their five closest friends. Females reported that the mean body size of their five closest friends was 3.82 on the FRS (Table A-56). Males, on the other hand, selected a mean size of 3.55 for their closest friends. Both means are within the normal weight range for adolescents. When given a set of body figures and asked to select which body size represents each of their five closest friends, overweight and obese participants chose a greater number of overweight figures compared to normal weight participants who chose smaller figures for each of their friends ($P < .03$). In fact, overweight and obese participants were more likely to elect at least two overweight or obese friends compared to normal weight participants ($P < .04$). This supports the study hypothesis that overweight and obese individuals would elect more overweight friends than their normal weight peers.

Approximately 13% of participants reported that their close friends would feel upset if they did not like fast food. This response was significantly associated with reporting that close friends would also feel upset if they were worried that fast food would make them fat ($P < .03$). Furthermore, 52% of respondents reported that their friends would feel upset if the respondent believed fast food was good for his or her body. Compared to normal weight and obese participants, overweight respondents were more likely to report that their friends would not feel upset if they thought fast food was good for their body ($P < .03$). Lastly, obesity was associated with reporting that friends think eating fast food will make them fat ($P < .01$).

Respondents reported that they share many of the same attitudes about food as their close friends including that eating fast food tastes good ($P < .01$), is fun ($P < .04$), saves time ($P < .01$), is healthy ($P < .03$), is convenient ($P < .04$), and is inexpensive ($P < .01$). Reporting that friends think eating fast food will make them fat was associated with reporting that friends think eating fast food increases total fat ($P < .02$). In addition, participants who were trying to lose weight reported that their friends think eating fast food will make them fat ($P < .03$). On the other hand, reporting that friends think eating fast food is healthy was associated with eating fast food three or more times in the last week ($P < .04$), and exercising one hour a week or less ($P < .01$).

Unlike normal weight participants, overweight and obese participants reported that they exercise more often than their close friends ($P < .04$). Whereas those who described themselves as about the right weight reported that they exercise the same amount as their closest friends ($P < .02$).

CHAPTER V

DISCUSSION

The present study sought to contribute to the body of literature on lifestyle factors associated with adolescent obesity. It is difficult to prove which factors cause obesity as controlled trials are time intensive and costly, and there is an ethical dilemma in the inducement of excess body fat. Cross sectional study designs offer cost effective alternatives in the initial quest to understand adolescent obesity. The cross sectional design of Attitudes about Food sought to link weight status with physical activity, fast food consumption, and weight perception.

Prevalence of Obesity

Overall, 32% of the Attitudes about Food sample had a BMI $\geq 85^{th}$ percentile for age. When examined categorically, 16% of respondents were overweight and an additional 16% were obese. These percentages are consistent with national data sets showing that about 16% of 12-19 year olds are overweight and 18% are obese.[3] The prevalence of obesity among males in the Attitudes about Food study (15%) differed slightly from national data at 19.3% of adolescent males. Proportions of obesity among females were the same in NHANES and Attitudes about Food at around 17%.[3]

Attitudes about Food researchers found significant racial disparities in the prevalence of obesity. The prevalence of obesity among African Americans (27%) was significantly higher than the prevalence of obesity among White respondents (9%). National findings report that about 24.4% of non-Hispanic Black individuals are obese and 15.6% of non-Hispanic White individuals are obese.[3] Therefore, the prevalence of

obesity among White individuals is higher in national data compared to data collected in the Attitudes about Food study. The limited sample size in the Attitudes about Food study likely underestimates the prevalence of obesity in White individuals. However, both national data and the present data demonstrate racial disparities in the prevalence of obesity indicating higher rates of obesity among Black individuals compared to White individuals.

Obesity and Selected Lifestyle Factors

Weight status of obese was significantly correlated with several study factors in Attitudes about Food. First, obesity was correlated with consuming three or more fast food meals in the last week of the Attitudes about Food study ($P < 0.05$). Numerous studies outline the diminished diet quality among adolescents who frequently consume fast food including lower intakes of fiber, vitamin C, calcium, and beta-carotene in addition to higher intakes of energy and total fat.[22-24] Furthermore, adolescents who regularly consume fast food are less likely to meet dietary recommendations compared to adolescents who consume fast food infrequently.[23] As a result, obese Attitudes about Food respondents are likely to have a poorer diet quality than non-obese respondents since these participants reported significantly higher intakes of fast food. Increased energy intake due to frequent fast food consumption is of special concern since this can lead to further energy imbalance and weight gain. It is not surprising that some of the heaviest children are becoming even heavier moving them into the highest percentiles of BMI for age.[3]

Weight status of obese was also positively correlated with frequency of consuming fast food with family members and discussing how food affects his or her weight with family. This could be an important piece of the puzzle, especially for adolescent females. Salvy found that females ate greater quantities of unhealthy food when accompanied by mothers compared to the company of friends.[53] Fulkerson et al found that adolescents were more likely to be overweight or obese if their families purchased fast food for dinner every week.[19]

Additionally, obese adolescents were more likely to report that they are trying to lose weight compared to non-obese counterparts. Although these respondents reported trying to lose weight, they are consuming fast food more often than their peers. The present study did not determine exactly how much fast food was consumed in the last week, but others have shown higher energy intakes and weight gain among adolescents who consumed fast food compared to those who did not consume fast food at all.[22,30] Furthermore, some researchers have estimated that energy intake is 40% higher when adolescents consume three or more fast food meals per week compared to adolescents who do not consume fast food on a regular basis.[22] Other evidence reveals that overweight adolescents do not successfully compensate for extra calories consumed from fast food meals like normal weight adolescents.[26] The higher consumption of fast food might work against obese adolescents' weight loss efforts. Fast food consumption could be a critical point of intervention for adolescents. It is also imperative to help adolescents identify energy dense foods and how to compensate for their food choices over the course of an entire day.

Fast Food Attitudes

Attitudes about fast food hold significant meaning in the present study. Overweight and obese respondents were more likely to report that eating fast food is fun compared to normal weight participants. Of further note, frequent consumption of fast food was associated with agreeing that eating fast food tastes good and is fun. Rydell et al cite that significant motivations for adolescent fast food consumption are taste, convenience, and cost.[65]

Physical Activity

One major finding in the Attitudes about Food study was the association between infrequent physical activity and fast food consumption. Compared to participants who did not consume fast food in the last week of the study, individuals who did consume fast food were more likely to report that they exercise less than one hour a week. This finding differs from French et al findings which did not detect any relationship between total amount of physical activity and fast food consumption.[22] Although French et al did not find any association with physical activity, they did find a relationship between amount of sedentary behavior and frequency of consuming fast food. As fast food consumption increased, so did the amount of time spent in front of the TV.[22] This is in agreement with the study by Pereira et al which linked frequent fast food consumption and sedentary behavior.[24] Since sedentary behavior is a risk factor for obesity and fast food consumption is associated with higher energy intakes, this could be a critical obesigenic combination. Furthermore, Ebbeling et al found that overweight adolescents were less likely to compensate for extra calories consumed from fast food meals

compared with normal weight peers.[26] This lends further evidence that adolescents who regularly consume fast food are at greater risk for energy imbalance and weight gain. Overweight adolescents' inability to compensate for extra calories from fast food consumption is alarming and puts them at greater risk for weight gain and obesity compared to normal weight peers. Of further note, overweight and obese adolescents are less likely to meet physical activity guidelines than normal weight adolescents which widens the gap of energy imbalance.[17,37]

Attitudes about Food researchers discovered significant relationships between amount of physical activity and attitudes about fast food. Exercising one day a week or less was associated with the response that eating fast food is fun. On the other hand, higher levels of physical activity were associated with two striking attitudes about fast food including 1) eating fast food will make me fat and 2) eating fast food will increase total fat. It is true that some studies report significant associations with weight gain and frequent fast food consumption although causality is difficult to prove.[24,30]. Likewise, large adolescent studies have shown significantly higher intakes of total fat in the diets of frequent fast food consumers compared to infrequent consumers.[22,24] Health professionals could focus on raising awareness of the overall diet quality of adolescents who frequently consume fast food meals while encouraging healthy options at fast food restaurants as well as fun fast food alternatives.

Weight Perception

Obese respondents were more likely to describe themselves as very overweight compared to non-obese participants demonstrating that they can accurately describe their

weight status. In fact, 100% of obese study respondents correctly identified their weight status. On the other hand, overweight respondents were not as successful at perceiving their weight status. Half of all overweight respondents reported that they were about the right weight while the other half accurately perceived that they were slightly overweight. Other researchers, such as Brener, show greater proportions of weight misperception compared to Attitudes about Food. In Brener's study, approximately 76% of overweight and 46% of obese adolescents underestimated their weight status.[28] One major concern with weight misperception is that adolescents who do not recognize excess weight are less likely to engage in much needed healthy weight control practices compared to accurate perceivers.[40] In the present study, both weight status and weight perception were significantly associated with trying to lose weight. Unlike Brener's findings, Attitudes about Food researchers found that obesity had a stronger association with trying to lose weight compared to perceiving self as very overweight. However, it is still concerning that half of the overweight respondents in the present study were unable to recognize their weight status. More efforts could hone in on screening adolescents for overweight status since this seems to be a consistent area of misperception.

Social Network

Adolescent peer networks seem to play a role in weight perception and food selection and vice versa. In the present study, viewing self as slightly or very overweight was significantly associated with selecting two or more close friends that the respondent considered overweight or obese ($P < .01$). This is similar to other studies that have demonstrated a clustering of obesity in adolescent friend groups. In fact, as BMI of

the adolescent increased, so did BMI of their closest friends according to Renna.[66] Schools with higher average BMIs had greater rates of weight underestimation compared to schools with lower average BMIs.[41] This finding indicates that exposure to obesity is related to underestimating weight status. The present clustering of perceived obesity is interesting especially because a large adult study documented the spread of obesity within an extensive social network.[45] The same causal pattern has not been identified in adolescents to date.

Researchers have identified peer support (or lack of peer support) as a factor that influences fast food consumption. In fact, youth who perceived peer support for healthy eating ate less fast food than youth who perceived no peer support.[32] Similarly, adolescents who thought their friends were not concerned about healthy eating ate fast food more often than adolescents whose friends were concerned about healthy eating.[22] In the present study, reporting that friends think eating fast food is healthy was associated with eating fast food most often in the last week ($P < .04$). Frequent fast food consumption is closely tied with the peer network. This could be another target for intervention. Adolescents respond to peer support whether that be actual or perceived support. Training adolescents to identify and select a variety of healthy foods is a good first step. However, eliciting peer support for healthy eating could go a long way in an adolescent's food selection.

The Attitudes about Food study is not without limitations. First, no Attitudes about Food participant reported being of Hispanic or Latino origin. The majority of study respondents were either African American or White. This distribution is dissimilar

to the most recent Texas demographic data calculating that 37.6% of the population is Hispanic or Latino. The lack of Hispanic participants limits the ability of Attitudes about Food to extrapolate data to a large section of the population.

Additional limitations were the small sample size, absence of dietary intake data, and lack of involvement of community members in the research process. Larger samples allow for greater statistical power and external validity. Despite the limited sample size, the present study is still in agreement with several large scale studies that investigated similar factors. Furthermore, dietary intake data would have strengthened this study by providing concrete information on nutrient intakes and dietary patterns among adolescents. The Healthy Eating Index (HEI) is one tool that researchers use to assess dietary patterns among adolescents.[67] Patterns identified by the HEI are compared to recommendations outlined by the Dietary Guidelines for Americans. Finally, utilizing community-based participatory research (CBPR) methods could have strengthened this study. CBPR is a model that involves community members from the initial development of survey instruments through data collection. This process strengthens relationships between researchers and the communities that they serve and enables researchers to develop more culturally appropriate methods and survey instruments.[68]

CHAPTER VI

CONCLUSION

The Attitudes about Food study contributes to the larger body of work on adolescent obesity and even offers some novel insight into factors associated with obesity. Presently, obese respondents reported that eating fast food is fun and they eat fast food with family members more often than non-obese peers. Based on the present findings, health promotion efforts could target family meals to reduce adolescent obesity and promote weight loss. As a result, health educators could focus on promoting fun, convenient, and nutrient dense family meals. Weight loss efforts could also concentrate on decreasing energy intake while promoting nutritious family meals at home and when eating out.

Attitudes about Food evidence shows that overweight adolescents have a difficult time correctly identifying their weight status which is a confirmation of other weight perception studies.[28] Health promotion efforts could focus on screening adolescents for overweight status before they move into higher percentiles of BMI for age. This could be the most critical group to target for obesity prevention. Accurately identifying weight status is a key step in developing healthy weight control practices.

In the present study, frequent fast food consumption and lack of physical activity went hand in hand. These findings are comparable to those of other adolescent studies indicating a clustering of risk factors for energy imbalance.[22,24] Normal weight adolescents have demonstrated a profound ability to compensate for extra calories consumed from fast food meals. Unfortunately, overweight adolescents did not display

this same innate ability after consuming fast food.[26] Overweight adolescents consumed more calories at the end of the day on days when fast food was consumed than their normal weight peers. This practice will eventually widen the gap of energy imbalance. Future studies could seek to understand the mechanisms by which this phenomenon occurs. In the meantime, health educators could focus on training overweight adolescents to balance out their food choices over the course of a day to create a balance in energy intake and energy expenditure.

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APPENDIX A

CORRELATION TABLES

Table A-1. Demographic Characteristics of Attitudes About Food Study Participants		
Adolescent Characteristics		
Age, years, mean (SD)	14.4	(1.9)
Ethnicity, n (%)		
Multi-racial	1	(4)
Other	2	(8)
African American	11	(44)
White	11	(44)
BMI, n (%)		
Normal (5^{th} to < 85^{th} percentile)	17	(68)
Overweight (85^{th} to < 95^{th} percentile)	4	(16)
Obese (≥ 95^{th} percentile)	4	(16)
Sex, n (%)		
Male	13	(52)
Female	12	(48)

Table A-2. Weight Status by Ethnicity

Weight Status	**N**	**(% by weight status)**	**(% of total)**
Normal (5^{th} to < 85^{th} percentile)			
Multi-racial	0	(0)	(0)
Other	2	(12)	(8)
African American	5	(29)	(20)
White	10	(59)	(40)
Overweight (85^{th} to < 95^{th} percentile)			
Multi-racial	1	(25)	(4)
Other	0	(0)	(0)
African American	3	(75)	(12)
White	0	(0)	(0)
Obese (≥ 95^{th} percentile)			
Multi-racial	0	(0)	(0)
Other	0	(0)	(0)
African American	3	(75)	(12)
White	1	(25)	(4)

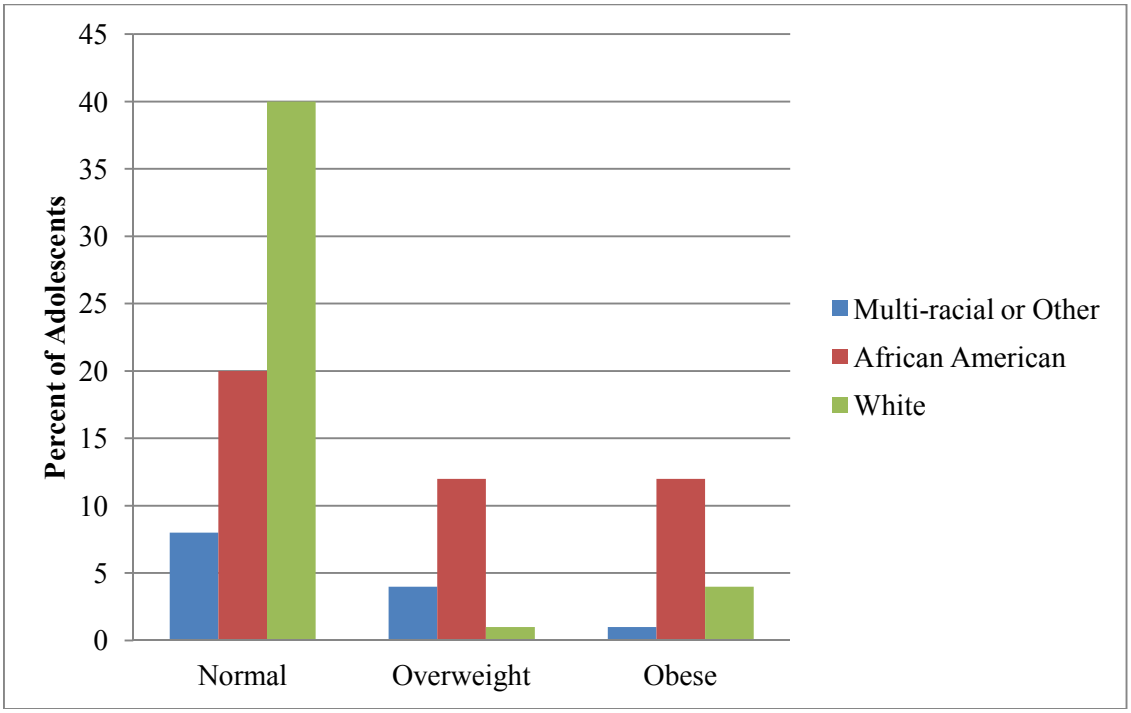


Figure A-1. Weight Status of Adolescents by Ethnicity

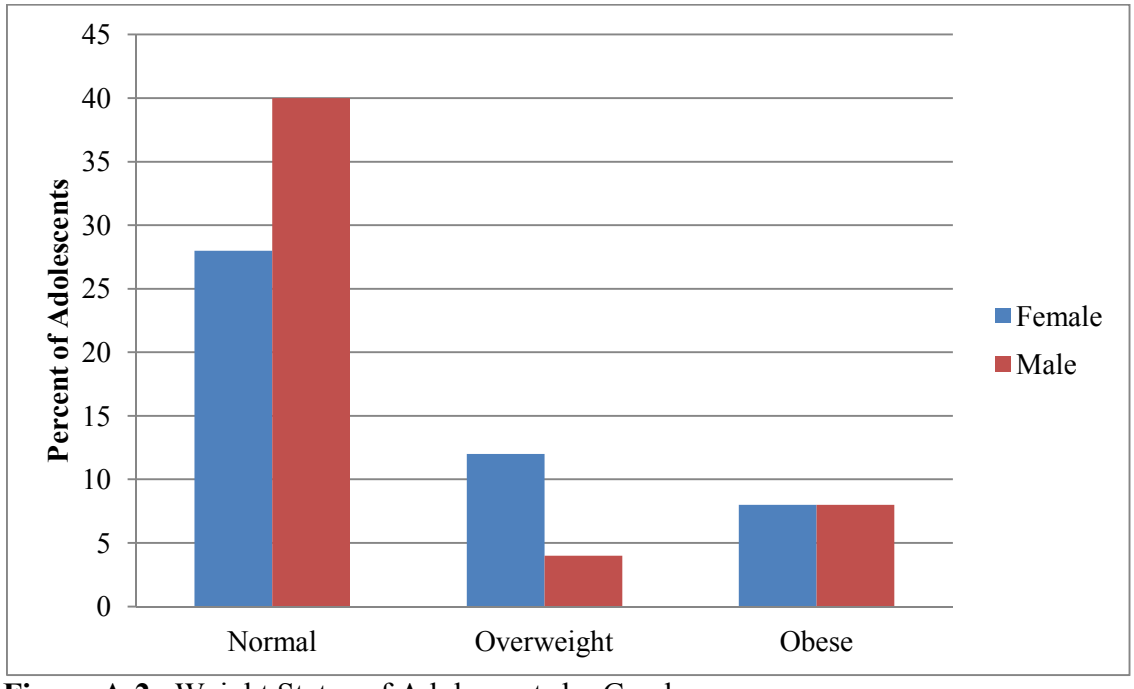


Figure A-2. Weight Status of Adolescents by Gender

Table A-3. Weight Status by Gender

Weight Status	**N**	**(% by weight status)**	**(% of total)**
Normal (5^{th} to < 85^{th} percentile)			
Female	7	(41)	(28)
Male	10	(59)	(40)
Overweight (85^{th} to < 95^{th} percentile)			
Female	3	(75)	(12)
Male	1	(25)	(4)
Obese (≥ 95^{th} percentile)			
Female	2	(50)	(8)
Male	2	(50)	(8)

Table A-4. Correlations between Normal Weight and Weight Perception

	Adolescent is Normal Weight (n = 17)	
Weight Perception	**r**	**p-value**
Describes self as underweight	.299	NS[a]
Describes self as about the right weight	.490	.01
Describes self as slightly overweight	-.636	< .001
Describes self as very overweight	-.430	.03

NS[a]: Not statistically significant

Table A-5. Correlations between Overweight and Weight Perception

	Adolescent is Overweight (n = 4)	
Weight Perception	**r**	**p-value**
Describes self as underweight	-.190	NS[a]
Describes self as about the right weight	-.089	NS[a]
Describes self as slightly overweight	.405	.05
Describes self as very overweight	-.129	NS[a]

NS[a]: Not statistically significant

Table A-6. Correlations between Obesity and Weight Perception

	Adolescent is Obese (n = 4)	
Weight Perception	**r**	**p-value**
Describes self as underweight	-.190	NS[a]
Describes self as about the right weight	-.535	.006
Describes self as slightly overweight	.405	.045
Describes self as very overweight	.676	.000

NS[a]: Not statistically significant

Table A-7. Correlations between Normal Weight and Dieting Behaviors

	Adolescent is Normal Weight (n = 17)	
Dieting Behavior	**r**	**p-value**
Trying to lose weight	-.527	.007
Trying to stay the same weight	-.016	NS[a]
Trying to gain weight	.185	NS[a]
Not trying to do anything about weight	.385	NS[a]

NS[a]: Not statistically significant

Table A-8. Correlations between Overweight and Dieting Behaviors

	Adolescent is Overweight (n = 4)	
Dieting Behavior	**r**	**p-value**
Trying to lose weight	-.029	NS[a]
Trying to stay the same weight	.266	NS[a]
Trying to gain weight	.010	NS[a]
Not trying to do anything about weight	-.245	NS[a]

NS[a]: Not statistically significant

Table A-9. Correlations between Obesity and Dieting Behaviors

	Adolescent is Obese (n = 4)	
Dieting Behavior	**r**	**p-value**
Trying to lose weight	.700	.000
Trying to stay the same weight	-.245	NS[a]
Trying to gain weight	-.245	NS[a]
Not trying to do anything about weight	-.245	NS[a]

NS[a]: Not statistically significant

Table A-10. Correlations between Normal Weight and Frequency of Discussing Weight with Friends in the Last Week of the Study

	Adolescent is Normal Weight (n = 17)	
Frequency of Discussing Wight with Friends	**r**	**p-value**
0 times	-.353	NS[a]
1-2 times	.183	NS[a]
3 or more times	.273	NS[a]

NS[a]: Not statistically significant

Table A-11. Correlations between Overweight and Frequency of Discussing Weight with Friends in the Last Week of the Study

	Adolescent is Overweight (n = 4)	
Frequency of Discussing Wight with Friends	**r**	**p-value**
0 times	.273	NS[a]
1-2 times	-.142	NS[a]
3 or more times	-.211	NS[a]

NS[a]: Not statistically significant

Table A-12. Correlations between Obesity and Frequency of Discussing Weight with Friends in the Last Week of the Study

	Adolescent is Obese (n = 4)	
Frequency of Discussing Wight with Friends	**r**	**p-value**
0 times	.183	NS[a]
1-2 times	-.095	NS[a]
3 or more times	-.142	NS[a]

NS[a]: Not statistically significant

Table A-13. Correlations between Normal Weight and Frequency of Discussing Weight with Family in the Last Week of the Study

	Adolescent is Normal Weight (n = 4)	
Frequency of Discussing Weight with Family	**r**	**p-value**
0 times	.324	NS[a]
1-2 times	-.224	NS[a]
3 or more times	-.312	NS[a]

NS[a]: Not statistically significant

Table A-14. Correlations between Oveweight and Frequency of Discussing Weight with Family in the Last Week of the Study

	Adolescent is Overweight (n = 4)	
Frequency of Discussing Weight with Family	**r**	**p-value**
0 times	-.158	NS[a]
1-2 times	.307	NS[a]
3 or more times	-.169	NS[a]

NS[a]: Not statistically significant

Table A-15. Correlations between Obesity and Frequency of Discussing Weight with Family in the Last Week of the Study

	Adolescent is Obese (n = 4)	
Frequency of Discussing Weight with Family	**r**	**p-value**
0 times	-.267	NS[a]
1-2 times	-.118	NS[a]
3 or more times	.619	.001

NS[a]: Not statistically significant

Table A-16. Correlations between Normal Weight and Frequency of Fast Food Consumption in the Last Week of the Study

	Adolescent is Normal Weight (n = 17)	
Frequency of Fast Food Consumption	**r**	**p-value**
0 times	.343	NS[a]
1-2 times	-.027	NS[a]
3 or more times	-.265	NS[a]

NS[a]: Not statistically significant

Table A-17. Correlations between Overweight and Frequency of Fast Food Consumption in the Last Week of the Study

	Adolescent is Overweight (n = 4)	
Frequency of Fast Food Consumption	**r**	**p-value**
0 times	-.218	NS[a]
1-2 times	.236	NS[a]
3 or more times	-.065	NS[a]

NS[a]: Not statistically significant

Table A-18. Correlations between Obesity and Frequency of Fast Food Consumption in the Last Week of the Study

	Adolescent is Obese (n = 4)	
Frequency of Fast Food Consumption	**r**	**p-value**
0 times	-.218	NS[a]
1-2 times	-.201	NS[a]
3 or more times	.402	.046

NS[a]: Not statistically significant

Table A-19. Correlations between Normal Weight and Frequency of Fast Food Consumption with Friends in the Last Week of the Study

	Adolescent is Normal Weight (n = 17)	
Frequency of Fast Food Consumption with Friends	**r**	**p-value**
0 times	.256	NS[a]
1-2 times	-.016	NS[a]
3 or more times	-.300	NS[a]

NS[a]: Not statistically significant

Table A-20. Correlations between Overweight and Frequency of Fast Food Consumption with Friends in the Last Week of the Study

	Adolescent is Overweight (n = 4)	
Frequency of Fast Food Consumption with Friends	**r**	**p-value**
0 times	-.053	NS[a]
1-2 times	-.245	NS[a]
3 or more times	.327	NS[a]

NS[a]: Not statistically significant

Table A-21. Correlations between Obesity and Frequency of Fast Food Consumption with Friends in the Last Week of the Study

	Adolescent is Obese (n = 4)	
Frequency of Fast Food Consumption with Friends	**r**	**p-value**
0 times	-.273	NS[a]
1-2 times	.266	NS[a]
3 or more times	.055	NS[a]

NS[a]: Not statistically significant

Table A-22. Correlations between Obesity and Frequency of Fast Food Consumption with Family in the Last Week of the Study

	Adolescent is Normal Weight (n = 17)	
Frequency of Fast Food Consumption with Family	**r**	**p-value**
0 times	.287	NS[a]
1-2 times	.210	NS[a]
3 or more times	-.527	.007

NS[a]: Not statistically significant

Table A-23. Correlations between Overweight and Frequency of Fast Food Consumption with Family in the Last Week of the Study

	Adolescent is Overweight (n = 4)	
Frequency of Fast Food Consumption with Family	**r**	**p-value**
0 times	-.299	NS[a]
1-2 times	.089	NS[a]
3 or more times	.214	NS[a]

NS[a]: Not statistically significant

Table A-24. Correlations between Obesity and Frequency of Fast Food Consumption with Family in the Last Week of the Study

	Adolescent is Obese (n = 4)	
Frequency of Fast Food Consumption with Family	**r**	**p-value**
0 times	-.065	NS[a]
1-2 times	-.356	NS[a]
3 or more times	.457	.022

NS[a]: Not statistically significant

Table A-25. Correlations between Normal Weight and Fast Food Attitudes

	Adolescent is Normal Weight (n = 17)	
Fast Food Attitude	**r**	**p-value**
Eating fast food will make me fat	.144	NS[a]
Eating fast food will make me popular	---	---
Eating fast food tastes good	-.343	NS[a]
Eating fast food is fun	-.514	.009
Eating fast food saves time	.027	NS[a]
Eating fast food is cheap	.336	NS[a]
Eating fast food increases the fat I eat	.021	NS[a]
Eating fast food is a way to hang out with friends	-.021	NS[a]
Eating fast food is easy	.081	NS[a]
Eating fast food is healthy for my body	-.114	NS[a]

NS[a]: Not statistically significant

Table A-26. Correlations between Overweight and Fast Food Attitudes

	Adolescent is Overweight (n = 4)	
Fast Food Attitude	**r**	**p-value**
Eating fast food will make me fat	-.419	.037
Eating fast food will make me popular	---	---
Eating fast food tastes good	.218	NS[a]
Eating fast food is fun	.600	.002
Eating fast food saves time	.201	NS[a]
Eating fast food is cheap	-.100	NS[a]
Eating fast food increases the fat I eat	-.127	NS[a]
Eating fast food is a way to hang out with friends	-.100	NS[a]
Eating fast food is easy	.065	NS[a]
Eating fast food is healthy for my body	.273	NS[a]

NS[a]: Not statistically significant

Table A-27. Correlations between Obesity and Fast Food Attitudes

	Adolescent is Obese (n = 4)	
Fast Food Attitude	**r**	**p-value**
Eating fast food will make me fat	.236	NS[a]
Eating fast food will make me popular	---	---
Eating fast food tastes good	.218	NS[a]
Eating fast food is fun	.055	NS[a]
Eating fast food saves time	-.236	NS[a]
Eating fast food is cheap	-.327	NS[a]
Eating fast food increases the fat I eat	.100	NS[a]
Eating fast food is a way to hang out with friends	.127	NS[a]
Eating fast food is easy	-.168	NS[a]
Eating fast food is healthy for my body	-.129	NS[a]

NS[a]: Not statistically significant

Table A-28. Correlations between Normal Weight Status and Number of Days that Adolescent Engages in Physical Activity Each Week

	Adolescent is Normal Weight (n = 17)	
Number of Days per Week that Adolescent Engages in Physical Activity	**r**	**p-value**
7 days	.046	NS[a]
4-6 days	.287	NS[a]
2-3 days	-.300	NS[a]
1 day or less	-.086	NS[a]

NS[a]: Not statistically significant

Table A-29. Correlations between Overweight and Number of Days that Adolescents Engage in Physical Activity Each Week

	Adolescent is Overweight (n = 4)	
Number of Days per Week that Adolescent Engages in Physical Activity	**r**	**p-value**
7 days	-.029	NS[a]
4-6 days	-.299	NS[a]
2-3 days	.327	NS[a]
1 day or less	.055	NS[a]

NS[a]: Not statistically significant

Table A-30. Correlations between Obesity and Number of Days that Adolescent Engages in Physical Activity Each Week

	Adolescent is Obese (n = 4)	
Number of Days per Week that Adolescent Engages in Physical Activity	**r**	**p-value**
7 days	-.029	NS[a]
4-6 days	-.065	NS[a]
2-3 days	.055	NS[a]
1 day or less	.055	NS[a]

NS[a]: Not statistically significant

Table A-31. Correlations between Normal Weight Perception and Dieting Behaviors

	Describes Self as About the Right Weight (n = 19)	
Dieting Behavior	**r**	**p-value**
Trying to lose weight	-.400	.048
Trying to stay the same weight	.268	NS[a]
Trying to gain weight	-.306	NS[a]
Not trying to do anything about weight	.459	.021

NS[a]: Not statistically significant

Table A-32. Correlations between Overweight Perception and Dieting Behaviors

	Describes Self as Slightly Overweight (n = 4)	
Dieting Behavior	**r**	**p-value**
Trying to lose weight	.457	.022
Trying to stay the same weight	.010	.961
Trying to gain weight	-.245	NS[a]
Not trying to do anything about weight	-.245	NS[a]

NS[a]: Not statistically significant

Table A-33. Correlations between Obese Weight Perception and Dieting Behaviors

	Describes Self as Very Overweight (n = 2)	
Dieting Behavior	**r**	**p-value**
Trying to lose weight	.473	.017
Trying to stay the same weight	-.166	NS[a]
Trying to gain weight	-.166	NS[a]
Not trying to do anything about weight	-.166	NS[a]

NS[a]: Not statistically significant

Table A-34: Correlations between Normal Weight Perception and Frequency of Discussing Weight with Friends in the Last Week of the Study

	Describes Self as About the Right Weight (n = 19)	
Frequency of Discussing Weight with Friends	**r**	**p-value**
0 times	-.018	NS[a]
1-2 times	.225	NS[a]
3 or more times	-.147	NS[a]

NS[a]: Not statistically significant

Table A-35. Correlations between Overweight Perception and Frequency of Discussing Weight with Friends in the Last Week of the Study

	Describes Self as Slightly Overweight (n = 4)	
Frequency of Discussing Weight with Friends	**r**	**p-value**
0 times	.230	NS[a]
1-2 times	-.120	NS[a]
3 or more times	-.178	NS[a]

NS[a]: Not statistically significant

Table A-36. Correlations between Obese Weight Perception and Frequency of Discussing Weight with Friends in the Last Week of the Study

	Describes Self as Very Overweight (n = 2)	
Frequency of Discussing Weight with Friends	**r**	**p-value**
0 times	.127	NS[a]
1-2 times	-.066	NS[a]
3 or more times	-.098	NS[a]

NS[a]: Not statistically significant

Table A-37. Correlations between Normal Weight Perception and Frequency of Discussing Weight with Family in the Last Week of the Study

	Describes Self as About the Right Weight (n = 19)	
Frequency of Discussing Weight with Family	**r**	**p-value**
0 times	.548	.006
1-2 times	-.561	.007
3 or more times	-.228	NS[a]

NS[a]: Not statistically significant

Table A-38. Correlations between Overweight Perception and Frequency of Discussing Weight with Family in the Last Week of the Study

	Describes Self as Slightly Overweight (n = 4)	
Frequency of Discussing Weight with Family	**r**	**p-value**
0 times	-.535	.007
1-2 times	.583	.004
3 or more times	.238	NS[a]

NS[a]: Not statistically significant

Table A-39. Correlations between Obese Weight Perception and Frequency of Discussing Weight with Family in the Last Week of the Study

	Describes Self as Very Overweight (n = 2)	
Frequency of Discussing Weight with Family	**r**	**p-value**
0 times	-.107	NS[a]
1-2 times	-.118	NS[a]
3 or more times	.342	NS[a]

NS[a]: Not statistically significant

Table A-40. Correlations between Normal Weight Perception and Frequency of Fast Food Consumption in the Last Week of the Study

	Describes Self as About the Right Weight (n = 19)	
Frequency of Consuming Fast Food	**r**	**p-value**
0 times	.204	NS[a]
1-2 times	.294	NS[a]
3 or more times	-.490	.013

NS[a]: Not statistically significant

Table A-41. Correlations between Overweight Perception and Frequency of Fast Food Consumption in the Last Week of the Study

	Describes Self as Slightly Overweight (n = 4)	
Frequency of Consuming Fast Food	**r**	**p-value**
0 times	-.218	NS[a]
1-2 times	-.201	NS[a]
3 or more times	.402	.046

NS[a]: Not statistically significant

Table A-42. Correlations between Obese Weight Perception and Frequency of Fast Food Consumption in the Last Week of the Study

	Describes Self as Very Overweight (n = 2)	
Frequency of Consuming Fast Food	**r**	**p-value**
0 times	-.147	NS[a]
1-2 times	.012	NS[a]
3 or more times	.114	NS[a]

NS[a]: Not statistically significant

Table A-43. Correlations between Normal Weight Perception and Frequency of Fast Food Consumption with Friends in the Last Week of the Study

	Describes Self as About the Right Weight (n = 19)	
Frequency of Consuming Fast Food with Friends	**r**	**p-value**
0 times	.263	NS[a]
1-2 times	-.115	NS[a]
3 or more times	-.204	NS[a]

NS[a]: Not statistically significant

Table A-44. Correlations between Overweight Perception and Frequency of Fast Food Consumption with Friends in the Last Week of the Study

	Describes Self as Slightly Overweight (n = 4)	
Frequency of Consuming Fast Food with Friends	**r**	**p-value**
0 times	-.053	NS[a]
1-2 times	-.245	NS[a]
3 or more times	.327	NS[a]

NS[a]: Not statistically significant

Table A-45. Correlations between Obese Weight Perception and Frequency of Fast Food Consumption with Friends in the Last Week of the Study

	Describes Self as Very Overweight (n = 2)	
Frequency of Consuming Fast Food with Friends	**r**	**p-value**
0 times	-.333	NS[a]
1-2 times	.525	.007
3 or more times	-.147	NS[a]

NS[a]: Not statistically significant

Table A-46. Correlations between Normal Weight Perception and Frequency of Fast Food Consumption with Family in the Last Week of the Study

	Describes Self as About the Right Weight (n = 19)	
Frequency of Consuming Fast Food with Family	**r**	**p-value**
0 times	.210	NS[a]
1-2 times	.167	NS[a]
3 or more times	-.400	.048

NS[a]: Not statistically significant

Table A-47. Correlations between Overweight Perception and Frequency of Fast Food Consumption with Family in the Last Week of the Study

	Describes Self as Slightly Overweight (n = 4)	
Frequency of Consuming Fast Food with Family	**r**	**p-value**
0 times	-.299	NS[a]
1-2 times	-.134	NS[a]
3 or more times	.457	.022

NS[a]: Not statistically significant

Table A-48. Correlations between Obese Weight Perception and Frequency of Fast Food Consumption with Family in the Last Week of the Study

	Describes Self as Very Overweight (n = 2)	
Frequency of Consuming Fast Food with Family	**r**	**p-value**
0 times	.114	NS[a]
1-2 times	-.241	.007
3 or more times	.144	NS[a]

NS[a]: Not statistically significant

Table A-49. Correlations between Normal Weight Perception and Fast Food Attitudes

	Describes Self as About the Right Weight (n = 19)	
Fast Food Attitude	**r**	**p-value**
Eating fast food will make me fat	.131	NS[a]
Eating fast food will make me popular	---	---
Eating fast food tastes good	-.204	NS[a]
Eating fast food is fun	-.408	NS[a]
Eating fast food saves time	.033	NS[a]
Eating fast food is cheap	.102	NS[a]
Eating fast food increases the fat I eat	.238	NS[a]
Eating fast food is a way to hang out with friends	.272	NS[a]
Eating fast food is easy	.140	NS[a]
Eating fast food is healthy for my body	-.361	NS[a]

NS[a]: Not statistically significant

Table A-50. Correlations between Weight Perception and Fast Food Attitudes

	Describes self as Slightly Overweight (n = 4)	
Fast Food Attitude	**r**	**p-value**
Eating fast food will make me fat	-.201	.037
Eating fast food will make me popular	---	---
Eating fast food tastes good	.218	NS[a]
Eating fast food is fun	.600	.002
Eating fast food saves time	-.017	NS[a]
Eating fast food is cheap	-.100	NS[a]
Eating fast food increases the fat I eat	.100	NS[a]
Eating fast food is a way to hang out with friends	-.100	NS[a]
Eating fast food is easy	-.168	NS[a]
Eating fast food is healthy for my body	.273	NS[a]

NS[a]: Not statistically significant

Table A-51. Correlations between Obese Weight Perception and Fast Food Attitudes

	Describes Self as Very Overweight (n = 2)	
Fast Food Attitude	**r**	**p-value**
Eating fast food will make me fat	.307	NS[a]
Eating fast food will make me popular	---	---
Eating fast food tastes good	.147	NS[a]
Eating fast food is fun	-.147	NS[a]
Eating fast food saves time	-.012	NS[a]
Eating fast food is cheap	-.221	NS[a]
Eating fast food increases the fat I eat	.221	NS[a]
Eating fast food is a way to hang out with friends	.086	NS[a]
Eating fast food is easy	-.114	NS[a]
Eating fast food is healthy for my body	-.087	NS[a]

NS[a]: Not statistically significant

Table A-52. Correlations between Normal Weight Perception and Number of Days that Adolescents Engages in Physical Activity Each Week

	Describes Self as About the Right Weight (n = 19)	
Number of Days per Week that Adolescent Engages in Physical Activity	**r**	**p-value**
7 days	-.218	NS[a]
4-6 days	.385	NS[a]
2-3 days	.000	NS[a]
1 day or less	-.204	NS[a]

NS[a]: Not statistically significant

Table A-53. Correlations between Overweight Perception and Number of Days that Adolescents Engages in Physical Activity Each Week

	Describes Self as Slightly Overweight (n = 4)	
Number of Days per Week that Adolescent Engages in Physical Activity	**r**	**p-value**
7 days	-.029	NS[a]
4-6 days	-.065	NS[a]
2-3 days	.055	NS[a]
1 day or less	.055	NS[a]

NS[a]: Not statistically significant

A-54. Correlations between Obese Weight Perception and Number of Days that Adolescents Engages in Physical Activity Each Week

	Describes Self as Very Overweight (n = 2)	
Number of Days per Week that Adolescent Engages in Physical Activity	**r**	**p-value**
7 days	.144	NS[a]
4-6 days	-.202	NS[a]
2-3 days	.221	NS[a]
1 day or less	-.147	NS[a]

NS[a]: Not statistically significant

Table A-55. Weight Status by Age

Weight Status	N	(% by weight status)	(% of total)
Normal (5th to < 85th percentile)			
12-13 years	6	(35)	(24)
14-15 years	8	(47)	(32)
16-17 years	3	(18)	(12)
Overweight (85th to < 95th percentile)			
12-13 years	0	(0)	(0)
14-15 years	1	(25)	(4)
16-17 years	3	(75)	(12)
Obese (≥ 95th percentile)			
12-13 years	2	(50)	(8)
14-15 years	0	(0)	(0)
16-17 years	2	(50)	(8)

Table A-56. Mean Body Size Ratings using the Stunkard Figure Rating Scales	
	Mean FRS Rating
Current Body Size	
Male	3.36
Female	3.96
Ideal Body Size	
Male	3.73
Female	3.73
Perceived Body Size of Five Closest Friends	
Male	3.55
Female	3.82

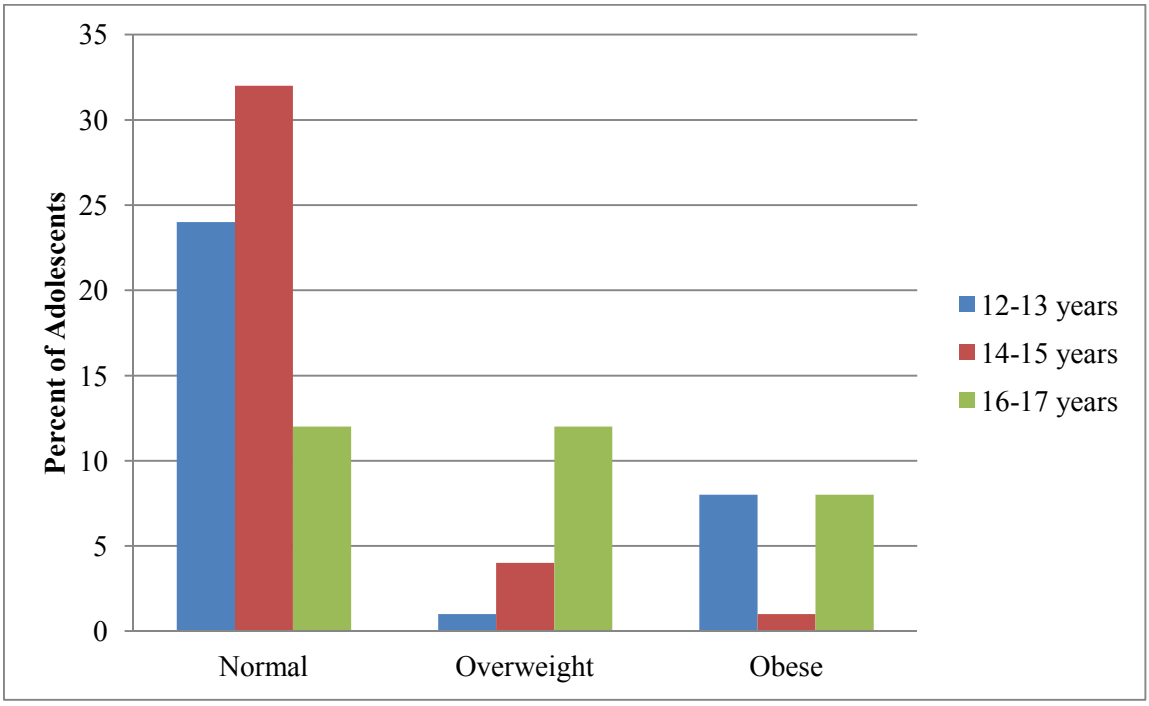


Figure A-3. Weight Status of Adolescents by Age Group

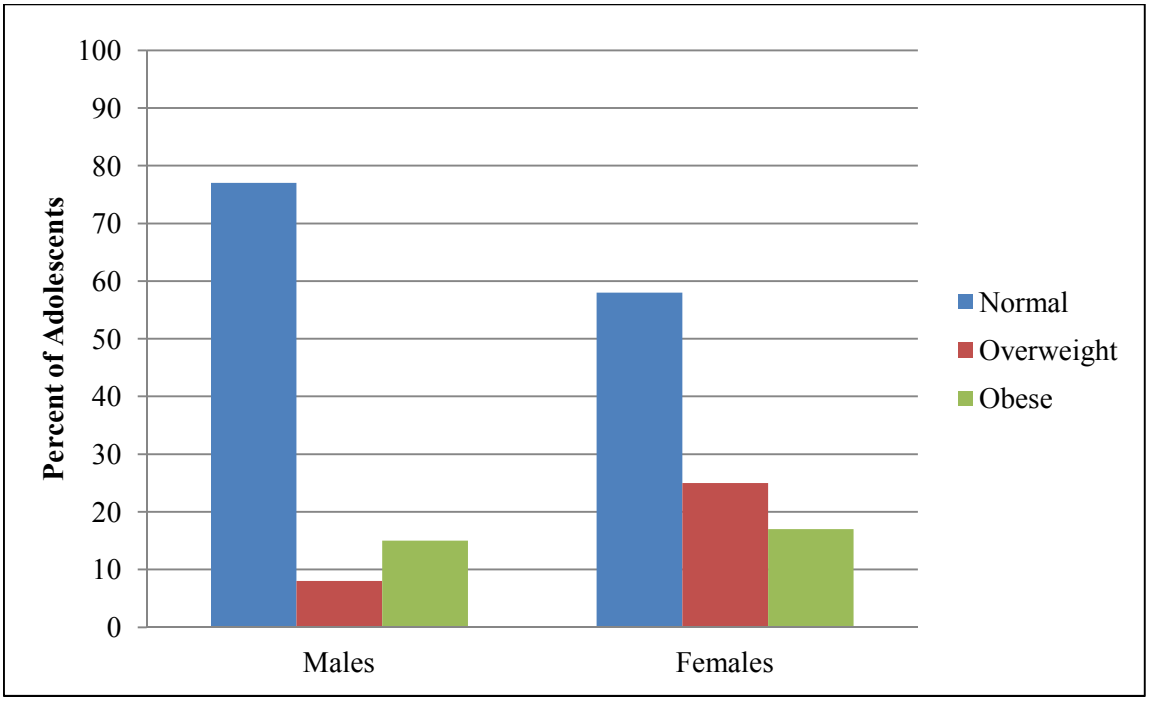


Figure A-4. Percentage of Adolescents Who Think Fast Food Tastes Good

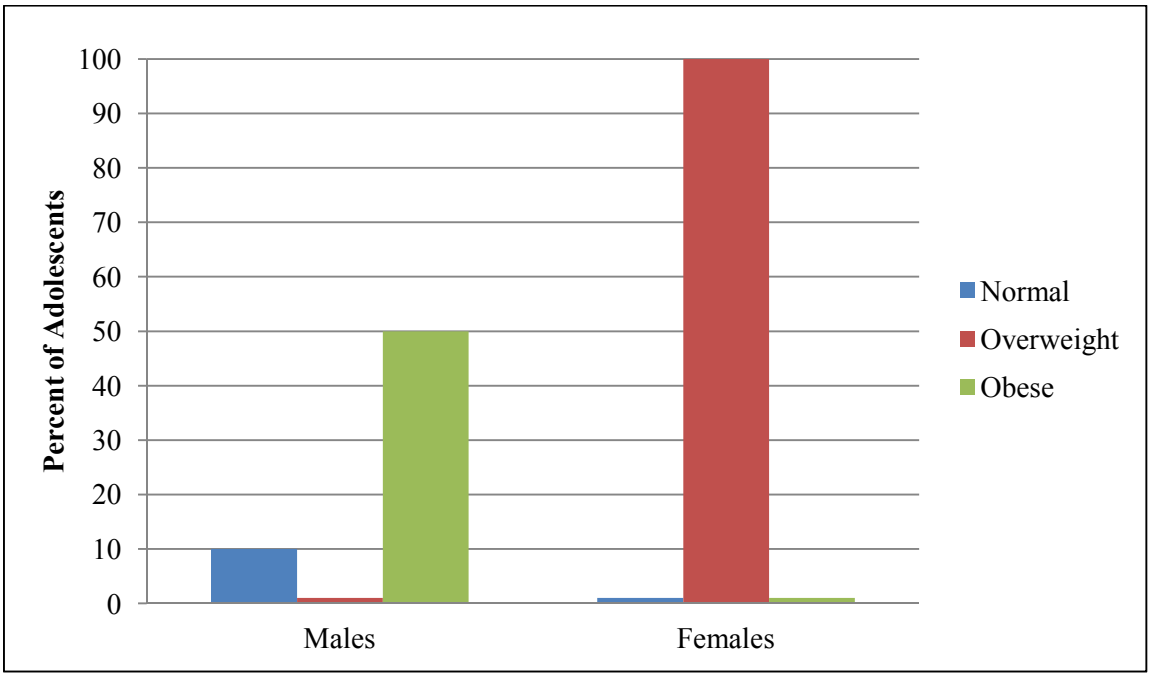


Figure A-5. Percentage of Adolescents Who Think Eating Fast Food Is Fun

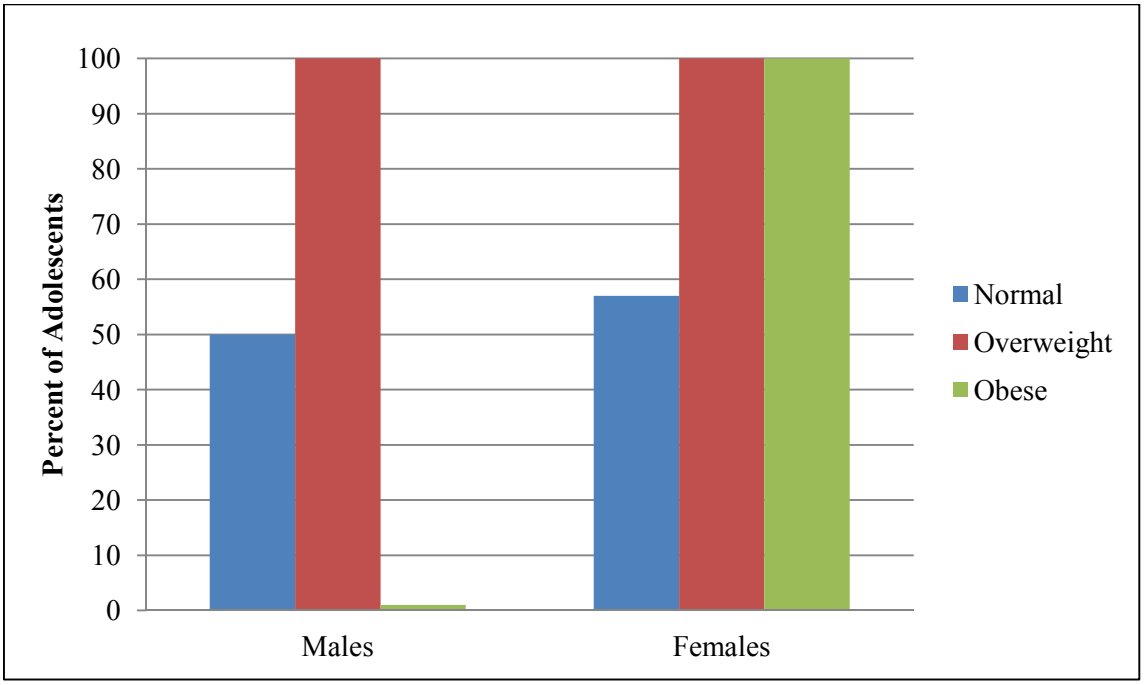


Figure A-6. Percentage of Adolescents Who Think Eating Fast Food Saves Time

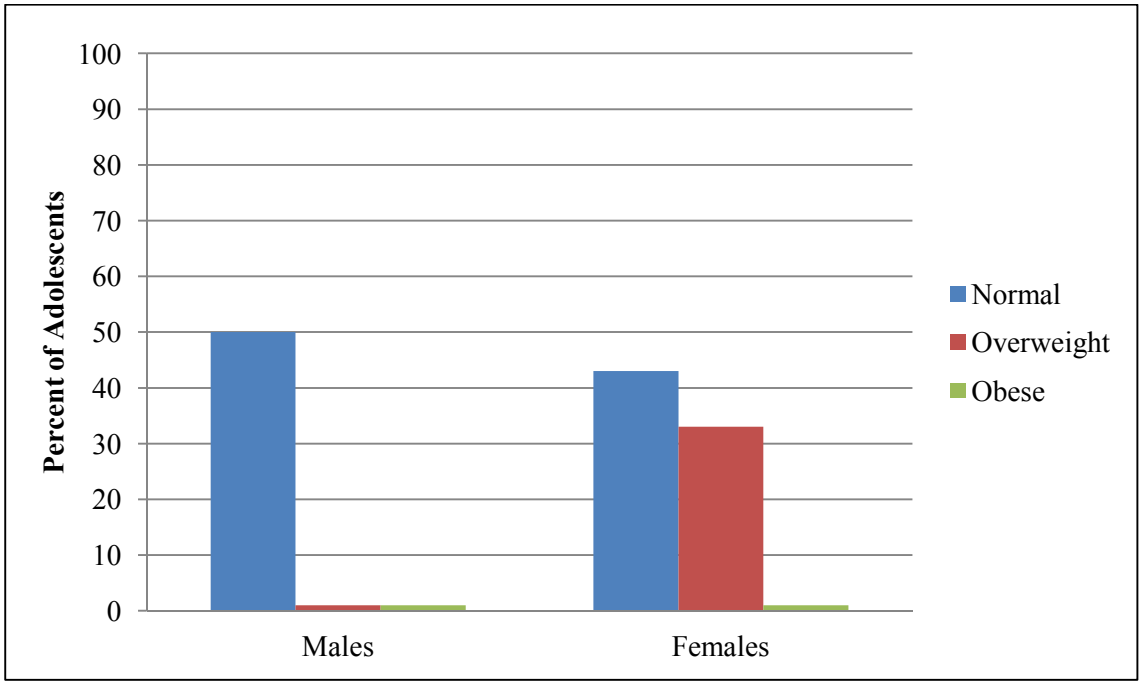


Figure A-7. Percentage of Adolescents Who Think Eating Fast Food Is Inexpensive

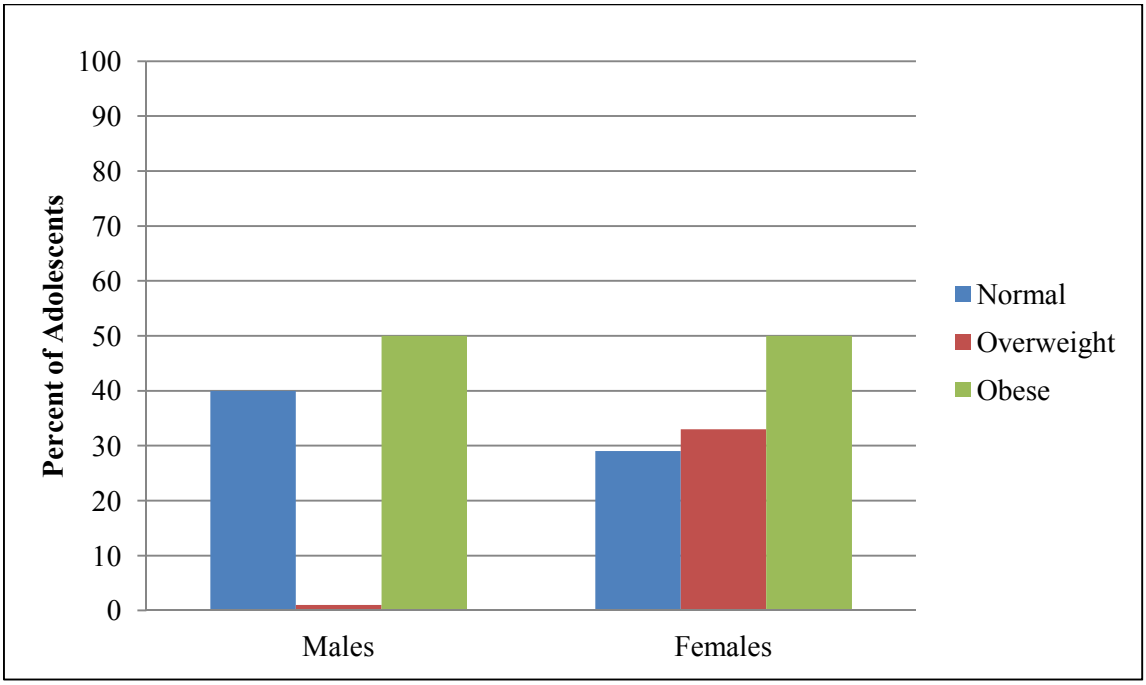


Figure A-8. Percentage of Adolescents Who Think Eating Fast Food Is a Way to Hangout with Friends

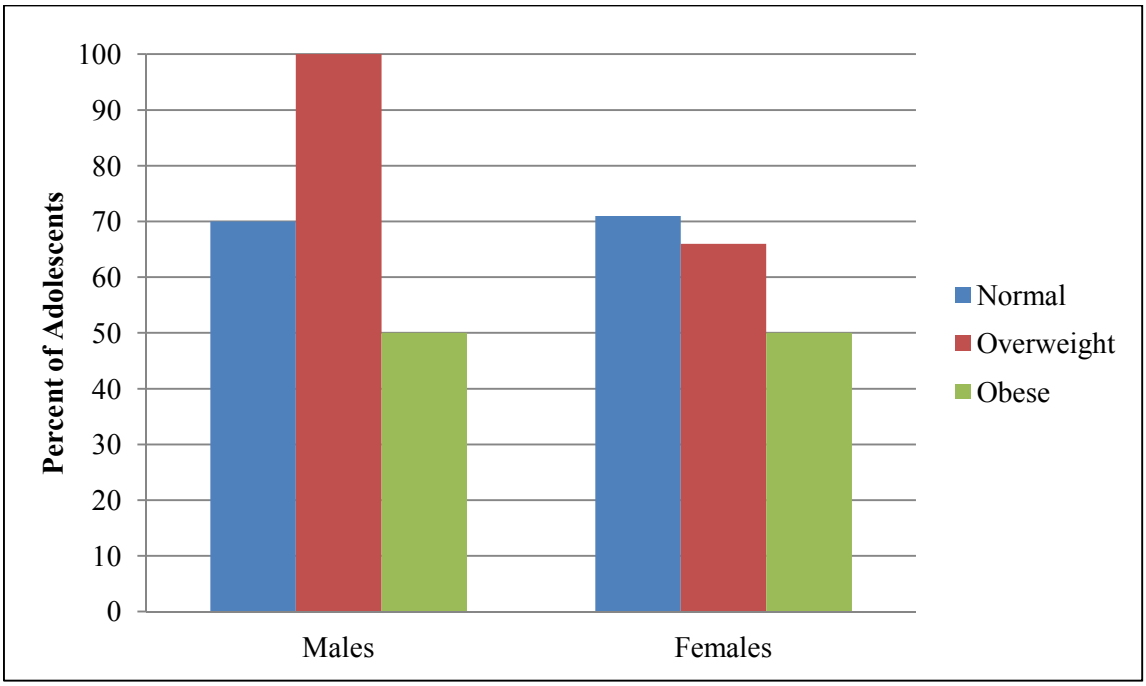


Figure A-9. Percentage of Adolescents Who Think Fast Food Is Easy to Get

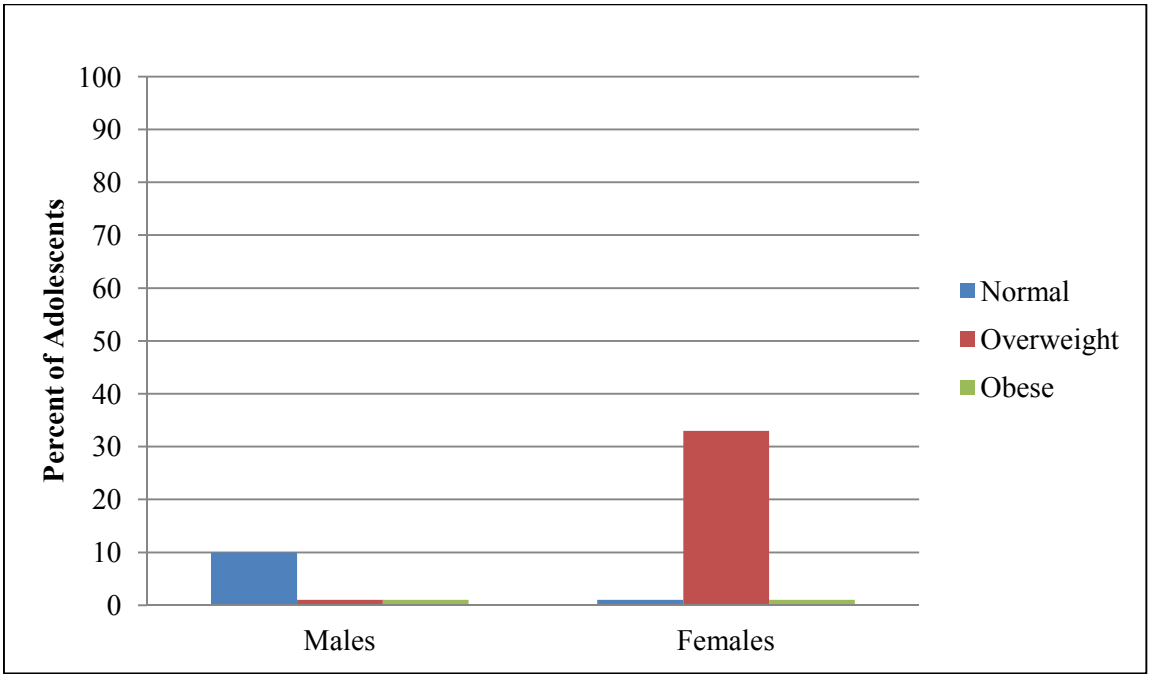


Figure A-10. Percentage of Adolescents Who Think Fast Food is Healthy

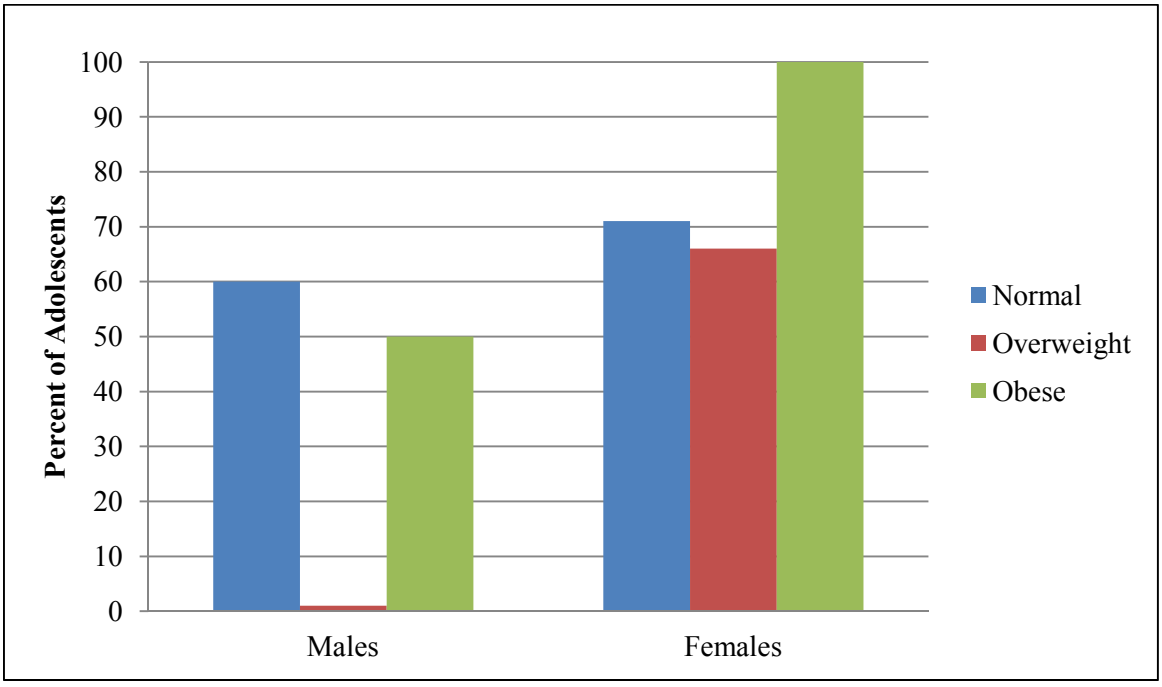


Figure A-11. Percentage of Adolescents Who Think Eating Fast Food Increases Total Fat Intake

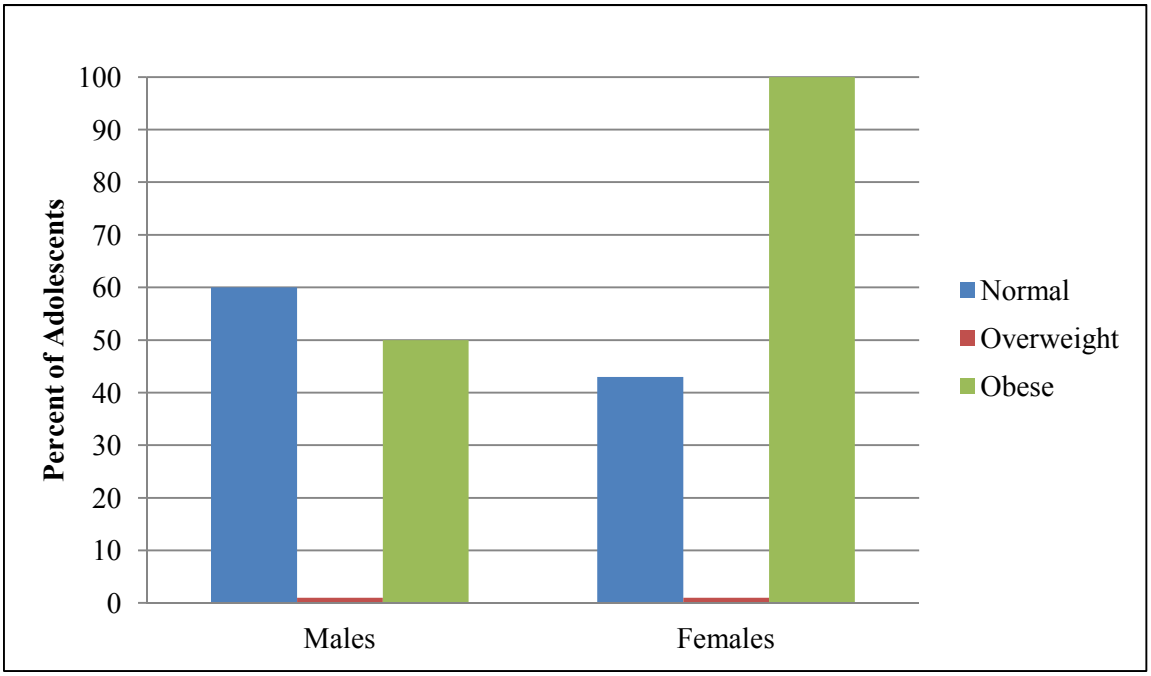


Figure A-12. Percentage of Adolescents Who Think Eating Fast Food Will Make Them Fat

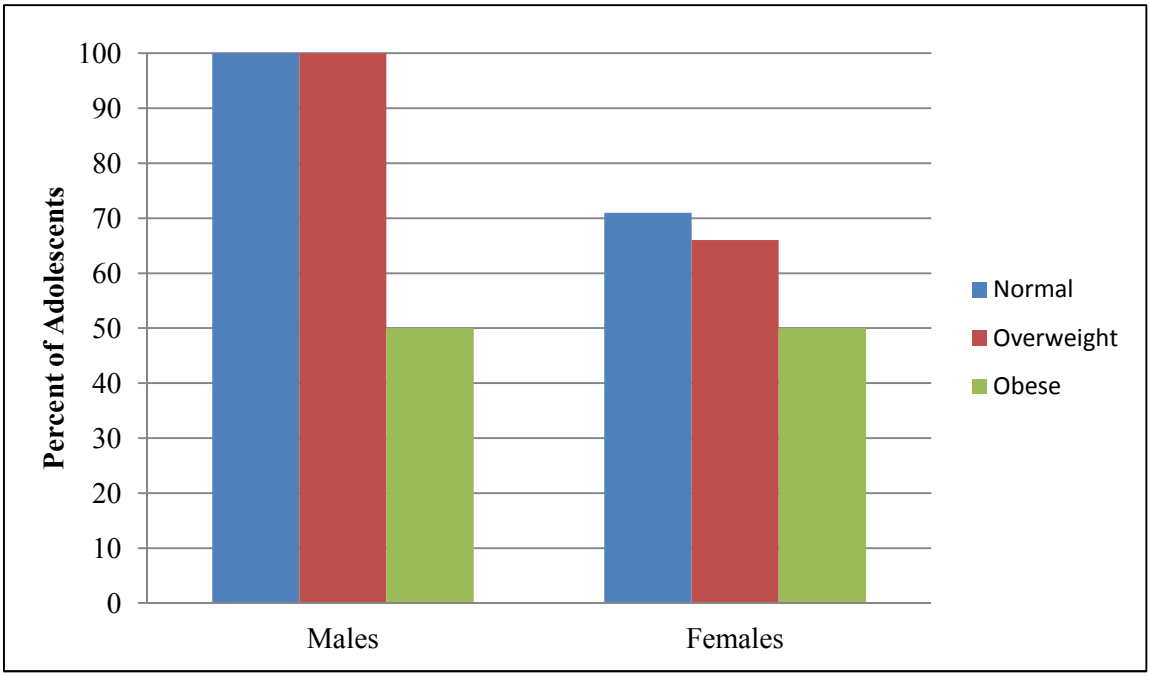


Figure A-13. Percentage of Adolescents Who Disagree that Eating Fast Food will Make them Popular

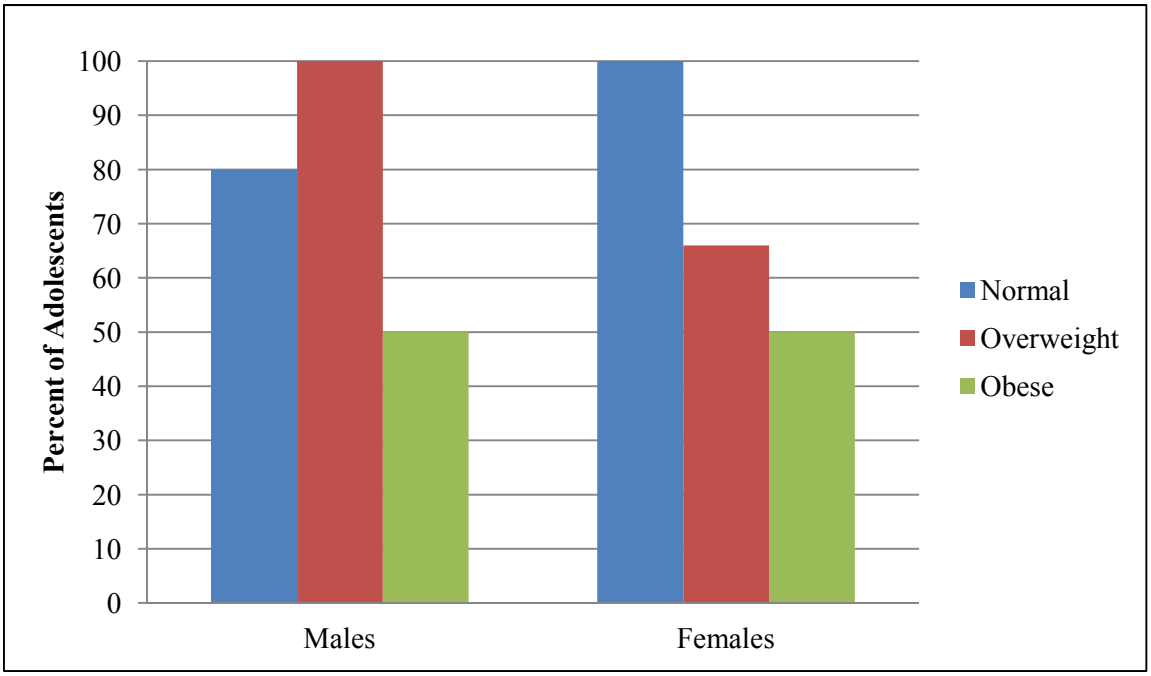


Figure A-14. Percentage of Adolescents Who Disagree that Fast Food is Healthy

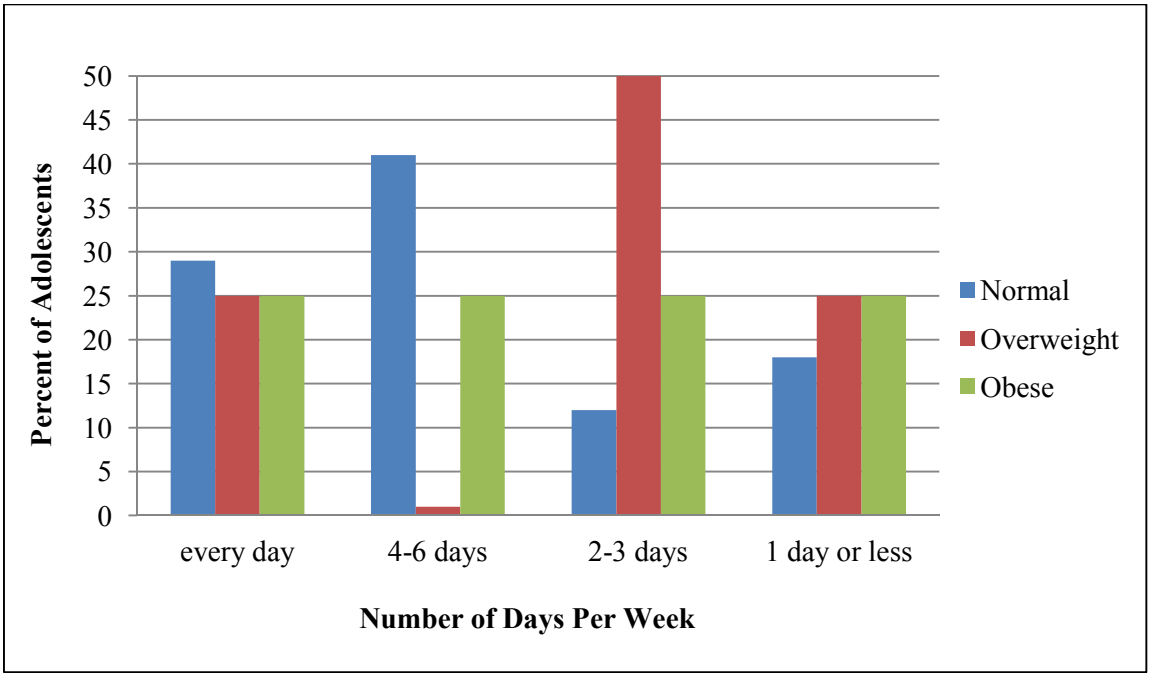


Figure A-15. Number of Days Per Week that Adolescents Engage in Physical Activity by Weight Status

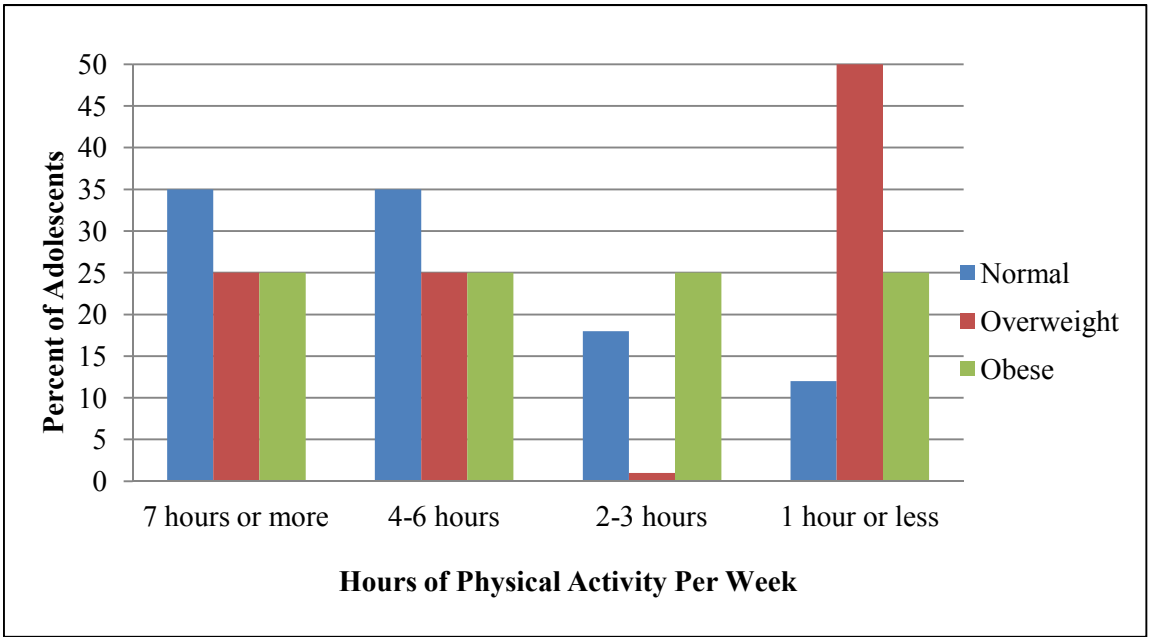


Figure A-16. Hours Spent in Physical Activity Each Week by Weight Status

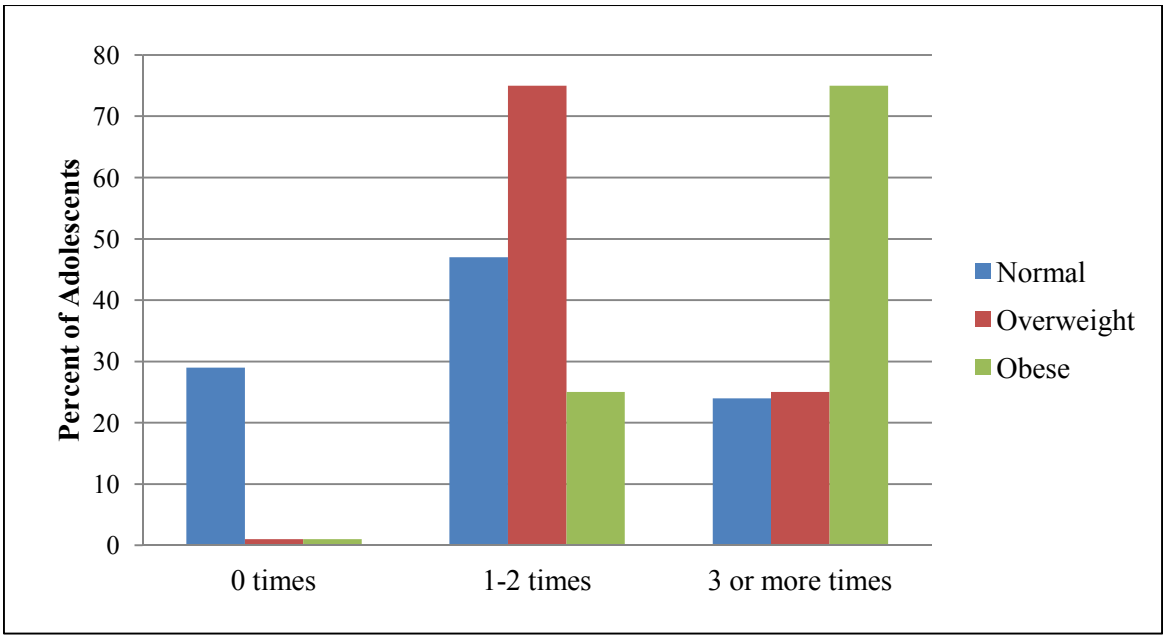


Figure A-17. Frequency of Consuming Fast Food in the Last Seven Days by Weight Status

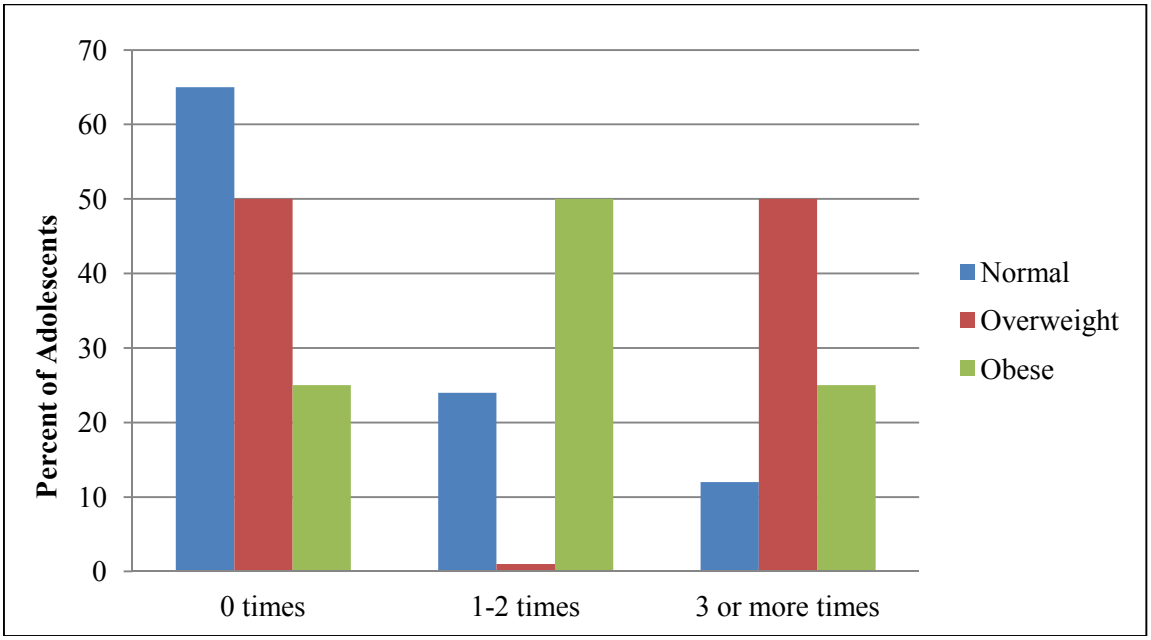


Figure A-18. Frequency of Consuming Fast Food with Friends in the Last Seven Days by Weight Status

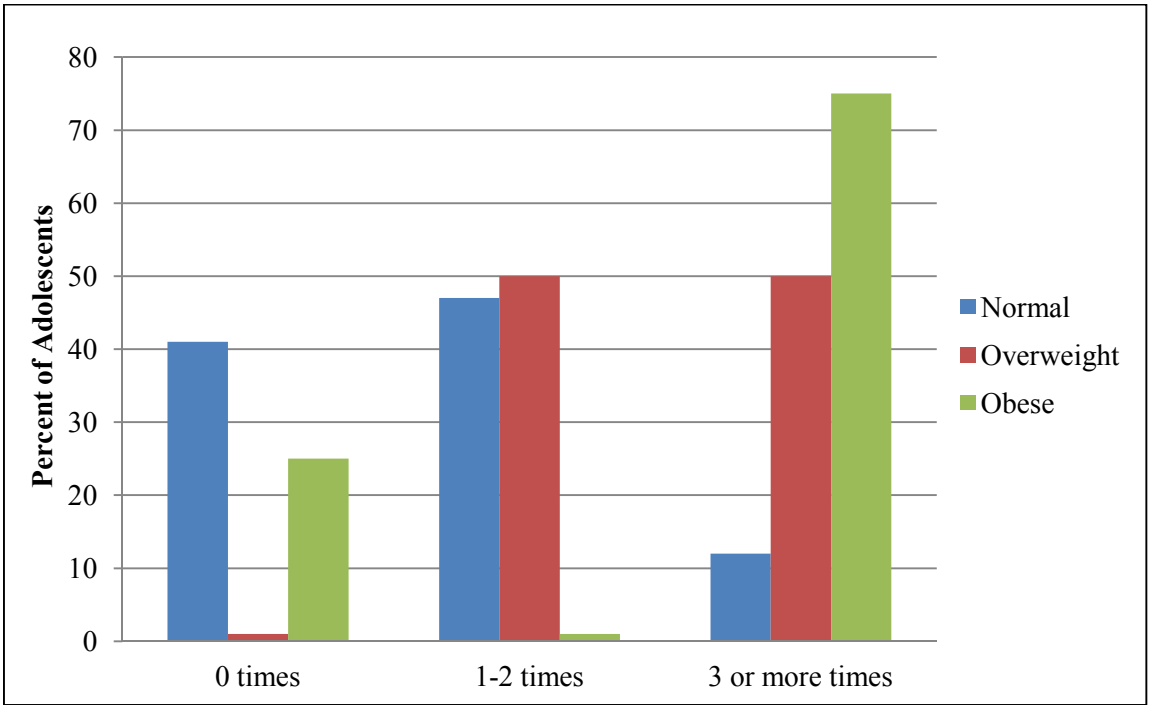


Figure A-19. Frequency of Consuming Fast Food with Family Members in the Last Seven Days by Weight Status

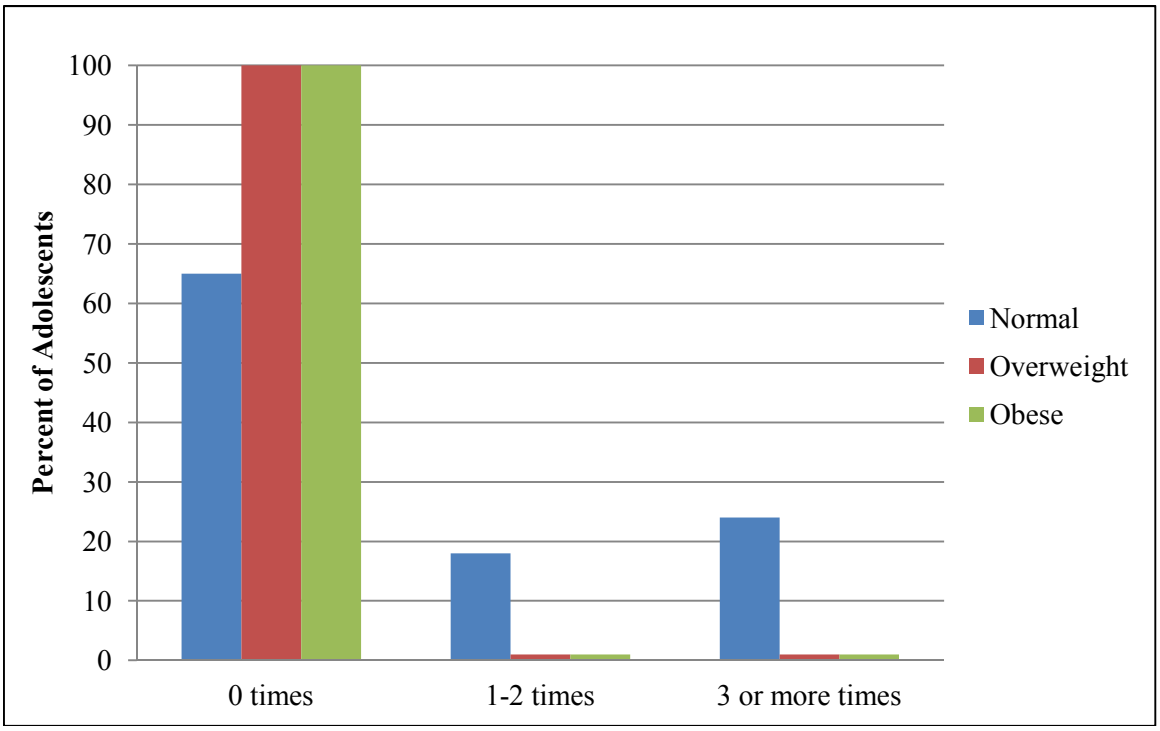


Figure A-20. Frequency of Discussing Weight with Friends in the Last Seven Days by Weight Status

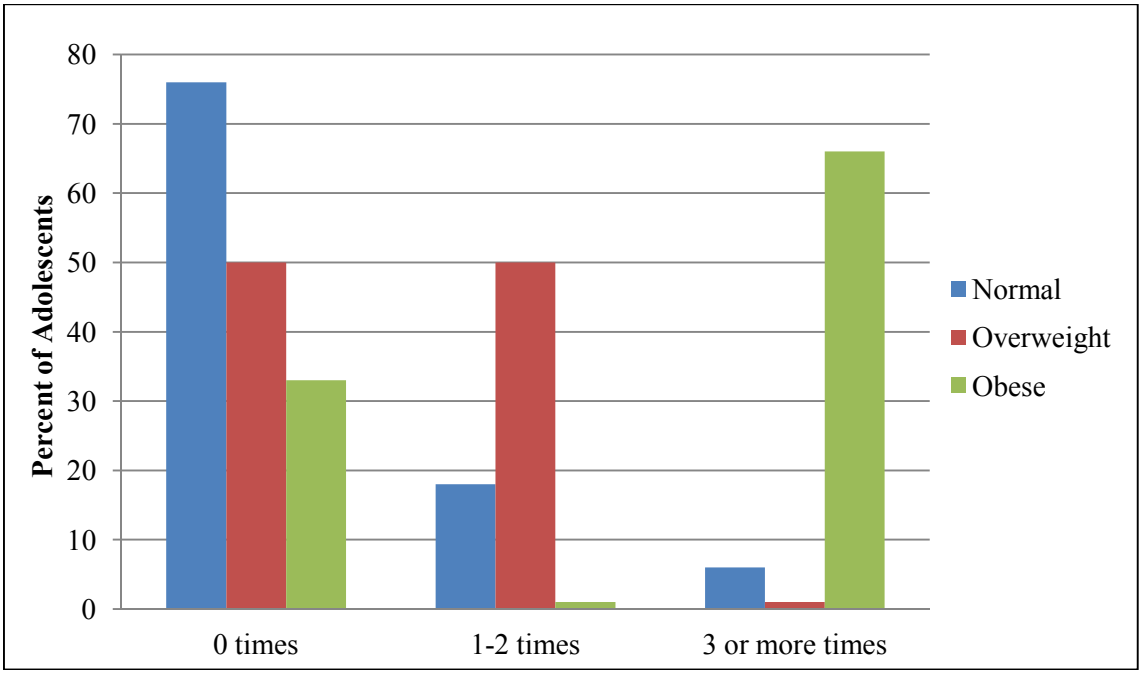


Figure A-21. Frequency of Discussing Weight with Family Members in the Last Seven Days by Weight Status

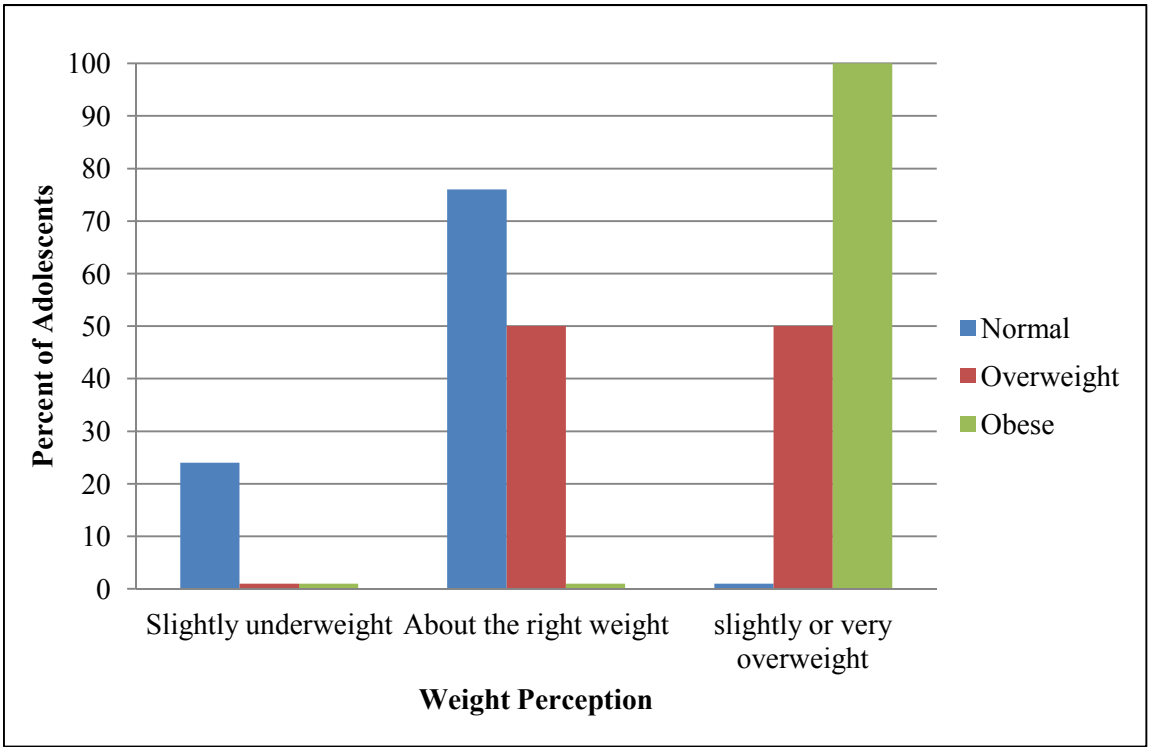


Figure A-22. Weight Perception by Actual Weight Status

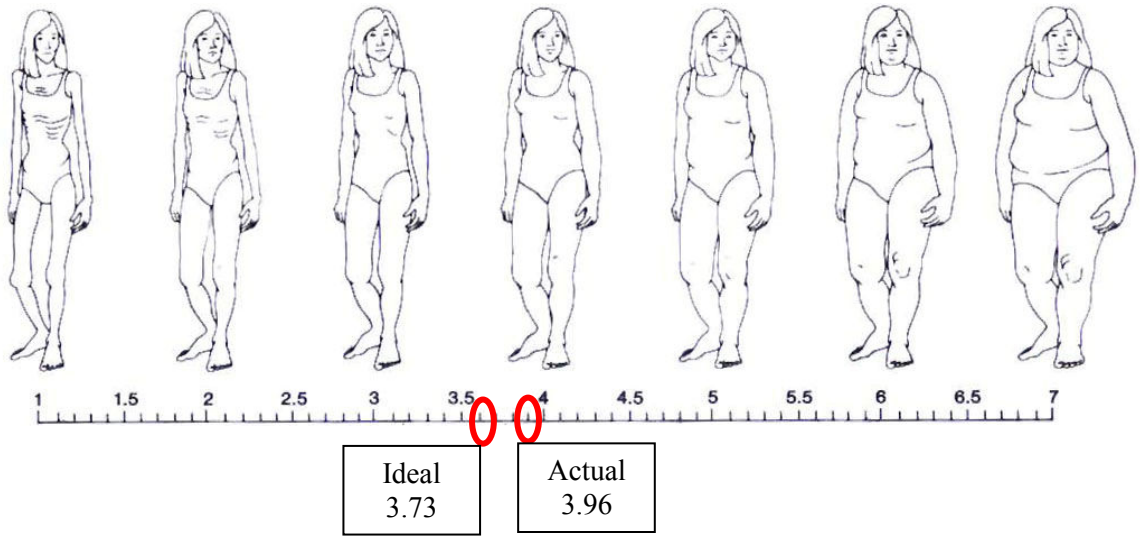


Figure A-23. Mean Actual and Ideal Body Size of Female Respondents.[69]
International Journal of Eating Disorders, Vol. 10, No. 2, 1991, page 202. Copyright 1983 Stunkard; Reprinted with permission of John Wiley & Sons, Inc.

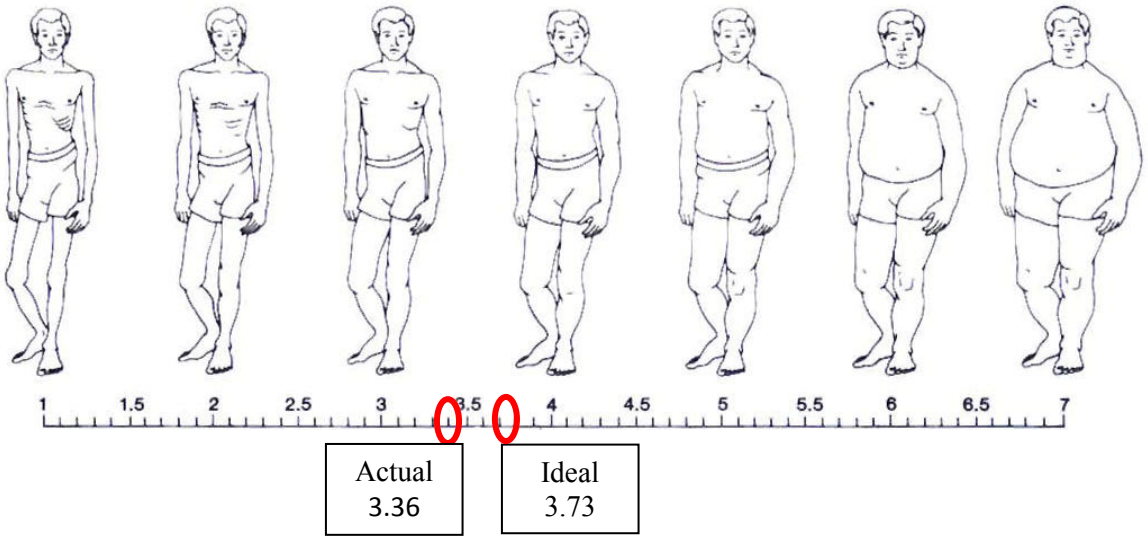


Figure A-24. Mean Actual and Ideal Body Size of Male Respondents.[69]
International Journal of Eating Disorders, Vol. 10, No. 2, 1991, page 202. Copyright 1983 Stunkard; Reprinted with permission of John Wiley & Sons, Inc.

APPENDIX B

CONSENT AND ASSENT FORMS

Parent Permission Form
Attitudes about Food

Introduction
The purpose of this form is to provide you (as the parent of a prospective research study participant) information that may affect your decision as to whether or not to let your child participate in this research study. Also, if you decide to let your child be involved in this study, this form will be used to record your consent.

This study is being conducted by Nicole Baker who is with the Department of Nutrition and Food Science at Texas A&M University. The purpose of this study is to examine your child's body size, physical activity, fast food consumption, and your child's friends' body sizes.

What will my child be asked to do?
If you allow your child to take part in this study, she or he will complete a survey. This will take them about 20 minutes to complete. The questions your child will be asked include questions regarding fast food consumption during the last 7 days, physical activity, weight perception, body size, your child's perception of his or her friends' weight and body size, and your child's perception of his or her friends' attitudes about eating fast food. Questions regarding weight are sensitive in nature and your child has the right to refuse to answer these and any other questions on the survey. If your child chooses to answer questions about weight or body size, these answers will be kept in confidence by the researchers. You will not have access to these answers. In addition, your child will have their height, weight, and waist measured. This part of the study will be done after your child has completed the survey.

What are the possible benefits of this study?
Your child will not receive direct benefit from this study; however, the information collected will help researchers and health professionals to understand ways to improve children's fast food eating habits and their knowledge of nutrition and body size.

What are the risks involved in this study?
Your child may experience embarrassment from answering questions about his or her body size. He/she may also experience a little discomfort when having his/her waist circumference measured. In the unforeseen event of injury resulting in participating in this study, there will be no financial compensation or free medical treatment offered by Texas A&M University. If evidence of child abuse is discovered during the physical exam, the researchers are obligated to report this to the proper authorities.

Who will know about my child's participation in this research study?
Everything learned about your child in this study will be confidential. If results of this study are published, your child will not be identified in any way. The data collected by

this project will be maintained by use of an identification number and not by your child's name. No one will be able to link your child's information to your child's name.

Does my child have to participate?
By signing this form, you are giving permission for your child's participation in the research project described above. Your decision to allow your child to participate is voluntary. Your child is free to choose not to participate or to stop participation at any time. Refusal to participate will have no negative effects on you or your child. There are no anticipated circumstances under which your child's participation may be terminated without your consent.

What if my child does not want to participate?
In addition to your permission, your child must agree to participate in the study. If you child does not want to participate they will not be included in the study and there will be no penalty. If your child initially agrees to be in the study he/she can change their mind later without any penalty.

What do I need to do if I agree to let my child participate?
If you agree to let your child participate, you must sign this consent form and your child the assent form.

Will there be any compensation?
If you decide to let your child participate in this study, we will put your child's name into a drawing in order to win one of fifteen gift packages. This gift package is valued at $35 and includes one $25 gift certificate to either Post Oak Mall or Texas Roadhouse, one buy one get one free coupon from Jamba Juice, and one coupon for a free small ice cream cup at Cold Stone Creamery. Each child has an equal chance of being selected for the gift package. In addition to being eligible to win a gift package, your child will help researchers and health professionals understand ways to improve children's fast food eating habits and their knowledge of nutrition and body size.

How do I turn in the permission forms if I decide to let my child participate?
Once you and your child have signed the required forms, you will have 2 weeks to return the signed papers. In order to return the papers you can:

a. have your child hand the Assent form and the Parent Consent form in to their leader in the large manila envelope provided within 2 weeks.

Whom do I contact with questions about the research?
If you have additional questions or concerns, you can contact Nicole Baker at (979) 220-6110 or at nicolealexis@tamu.edu. Her address is 1500 Research Parkway, Centeq B 130, College Station, TX, 77843.

Whom do I contact about my child's rights as a research participant?
This research study has been reviewed and approved by the Institutional Review Board on Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding your child's rights as a research participant, you can contact these offices at (979)458-4067 or irb@tamu.edu.

Signature
Please be sure you have read the above information, asked questions and received answers to your satisfaction. You will be given a copy of the consent form for your records. By signing this document, you consent to allow your child to participate in this study.

_____
Printed Name of Child

_____Date: _____
Signature of Parent/Legal Guardian

_____
Printed Name of Parent/Legal Guardian

_____Date: _____
Principal Investigator's Signature

Principal Investigator:
Nicole Baker, Graduate student
Department of Nutrition and Food Science
Texas A&M University
Phone: (979) 220-6110
Email: nicolealexis@tamu.edu

ASSENT FORM
Attitudes about Food

What is the purpose of this study?
The purpose of this study is to examine body size, physical activity, eating fast food, and your friends' body sizes.

What will I be asked to do?
If you agree to participate, you will complete a survey. This will take about 20 minutes to finish. You will be asked questions about eating fast food during the last 7 days, physical activity, your body size, your friends' body sizes, and your friends' attitudes about eating fast food. You can refuse to answer these and any other questions on the survey. In addition, your height, weight, and waist will be measured after turning in the survey.

Do I have to get permission from my parents?
Your parents have to give their permission for you to participate in this study.

Do I have to participate?
You do not have to participate in this study if you do not want to participate. Your participation is completely voluntary. You also have the right to decide not to participate even if your parents have given their OK. If you decide to participate and then change your mind, you can stop the survey or body measurements at any time. Nothing will happen to you if you decide not to participate in the study.

What are the possible benefits of this study?
You will not receive any direct benefit from being part of this study. However, if you decide to participate, it may help researchers learn more about adolescent's eating habits and how to make them better.

What are the risks involved in this study?
Some of the questions in the survey and the body measurements could cause you to get embarrassed. However, your body measurements will be taken privately and you will be given a cover page to cover your answers while filling out the survey in order to reduce feelings of embarrassment

Who will know about my participation in this research study?
The survey you fill out and the body measurements the researchers' record for you will be given a code in place of your name and will be kept privately in a locked box so that no one can link your name with your responses.

What are the risks involved in this study?
Some of the questions in the survey and the body measurements could cause you to get embarrassed. The survey you fill out and the body measurements the researchers record for you will be given a code in place of your name and will be kept privately in a locked box so that no one can link your name with your responses.

Will I be compensated?
If you decide to participate in this study, we will put your name into a drawing in order to win one of fifteen gift packages. This gift package is valued at $35 and includes one $25 gift certificate to either Post Oak Mall or Texas Roadhouse, one buy one get one free coupon from Jamba Juice, and one coupon for a free small ice cream cup at Cold Stone Creamery. Each child has an equal chance of being selected for the gift package. In addition to being eligible to win a gift package, you will help researchers and health professionals understand ways to improve children's fast food eating habits and their knowledge of nutrition and body size.

How can I join this study?
First, talk with your parents about participating in this study. If your parents agree that you can participate, then they will need to sign the Parent Consent form. You need to sign your name in the space provided below if you want to participate in the study. If your parents agree that you can participate and you agree to participate, you will have 2 weeks to return the signed papers. In order to return the papers you need to:

a. hand the Assent form and the Parent Consent form in to your leader in the manila envelope provided within two weeks.

Whom do I contact with questions about the research?
If you have more questions or concerns, you can contact Nicole Baker at (979) 220-6110 or at nicolealexis@tamu.edu. Her address is 1500 Research Parkway, Centeq B 130, College Station, TX, 77843.

Whom do I contact about my rights as a research participant?
This research study has been reviewed and approved by the Institutional Review Board on Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding your rights as a research participant, you can contact these offices at (979)458-4067 or irb@tamu.edu.

_____
Printed Name of Child

_____Date: _____
Child's Signature

_____Date: _____
Principal Investigator's Signature

Principal Investigator:
Nicole Baker
Graduate student
Department of Nutrition and Food Science
Texas A&M University
Phone: (979) 220-6110
Email: nicolealexis@tamu.edu

APPENDIX C

QUESTIONNAIRE

Texas A&M University “Attitudes about Food”
Version 07/29/09

Name: _____

Date: _____

Background Information

1. How old are you right now?

   ____ years old

2. What is your grade in school right now or what grade will you start in the fall?

   ____th grade

3. Are you a. . .

   Male or Female

4. How much do you currently weigh (in pounds)?

   ____ pounds

5. How tall are you?

   __ feet __ __ inches

6. Do you think of yourself as. . (Pick ONE answer that you think fits best)

   a. white

   b. African American

   c. Hispanic/Latino

   d. Asian or Pacific Islander

   e. Native American

   f. Multi-racial (mother and father are different races)

   g. other

7. How often do you usually exercise so much that you get out of breath or sweat? (Pick ONE answer that you think fits best)

a. every day
b. 4-6 days per week
c. 2-3 days per week
d. 1 day per week
e. at least 1 day every two weeks
f. at least 1 day per month
g. less than 1 day per month
h. never

8. How many hours do you usually exercise so much that you get out of breath or sweat? (Pick ONE answer that you think fits best)

a. 7 hours each week or more
b. 4-6 hours each week
c. 2-3 hours each week
d. about 1 hour each week
e. about half an hour each week
f. none

9. What is the HIGHEST grade in school which your father (stepfather or male guardian) and mother (stepmother or female guardian) have completed? (Mark ONE box for EACH parent or guardian.)

	Father or Male Guardian	Mother or Female Guardian
• Did not finish high school…….	☐	☐
• Finished high school (or got a GED)……	☐	☐
• Went to vocational school (computer/electrician/mechanic)…….	☐	☐
• Took some college (but did not graduate)…….	☐	☐
• Graduated from college or a university…….	☐	☐
• Has professional training beyond a…….. four-year college degree	☐	☐
• I don't know……	☐	☐

10. How do you describe your weight? (Pick ONE answer that you think fits best)

a. very underweight

b. slightly underweight

c. about the right weight

d. slightly overweight

e. very overweight

11. Which of the following are you trying to do about your weight? (Pick ONE answer that you think fits best)

a. lose weight

b. gain weight

c. trying to stay the same weight

d. I am not trying to do anything about my weight

12. Who are your closest friends? (list up to 5 in the spaces below)

	First name	Last name	Grade	Gender (circle one)
friend #1	_____		___th grade	M or F
friend #2	_____		___th grade	M or F
friend #3	_____		___th grade	M or F
friend #4	_____		___th grade	M or F
friend #5	_____		___th grade	M or F

Please answer the following questions for EACH OF THE FRIENDS you listed above:

	Not at all close	**Somewhat close**	**Very close**
13. How close do you feel to friend #1?			
14. How close do you feel to friend #2?			
15. How close do you feel to friend #3?			
16. How close do you feel to friend #4?			
17. How close do you feel to friend #5?			

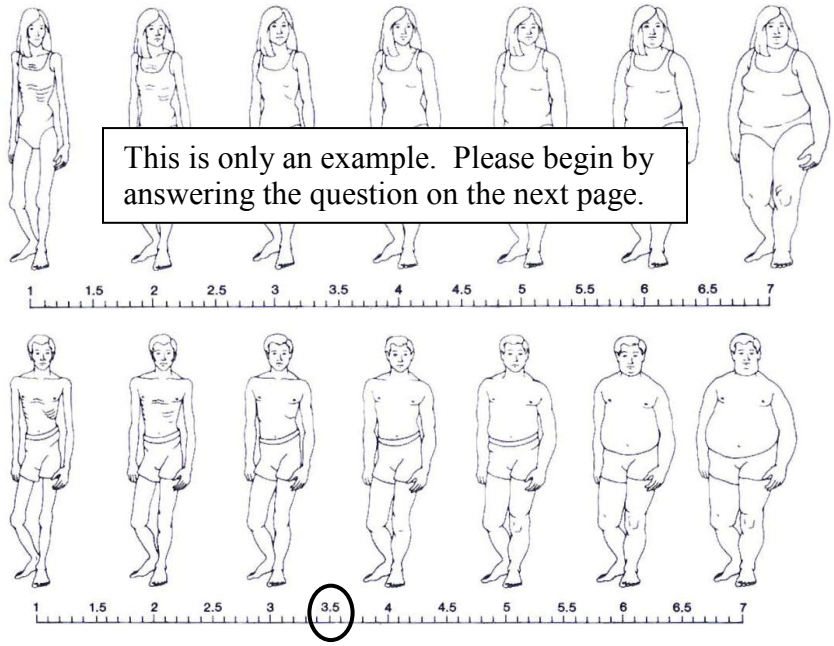
	Less than 6 months	**6 months to 1 year**	**Longer than 1 year to 3 years**	**Longer than 3 years to 5 years**	**Longer than 5 years to 10 years**	**Longer than 10 years**
18. How long have you known friend #1?						
19. How long have you known friend #2?						
20. How long have you known friend #3?						
21. How long have you known friend #4?						
22. How long have you known friend #5?						

	Yes	No
23. Is friend #1 in the Boys and Girls Club?		
24. Is friend #2 in the Boys and Girls Club?		
25. Is friend #3 in the Boys and Girls Club?		
26. Is friend #4 in the Boys and Girls Club?		
27. Is friend #5 in the Boys and Girls Club?		

Instructions:
On the next 7 pages you will see two sets of pictures on each page. Use the first set of pictures if you are answering a question about a girl. Use the second set of pictures if you are answering a question about a boy. You can show your answer by putting an **arrow** or a **circle** on the scale below each set of pictures.

For example, if a boy were answering the following question, he might mark his choice with an arrow or a circle like what is shown on the scale below.

Which picture looks most like you?



28. Which picture looks most like you?

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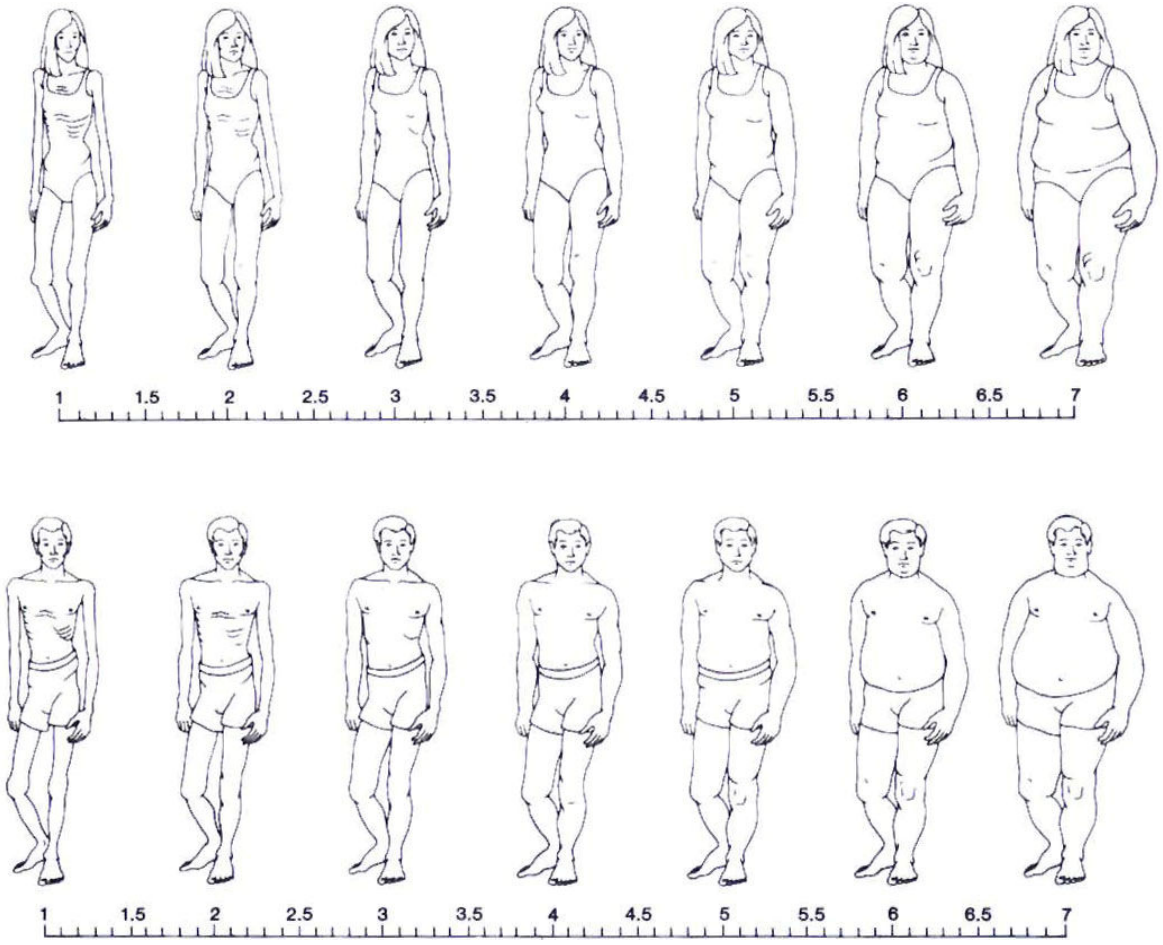
29. Which picture would you LIKE to look like?



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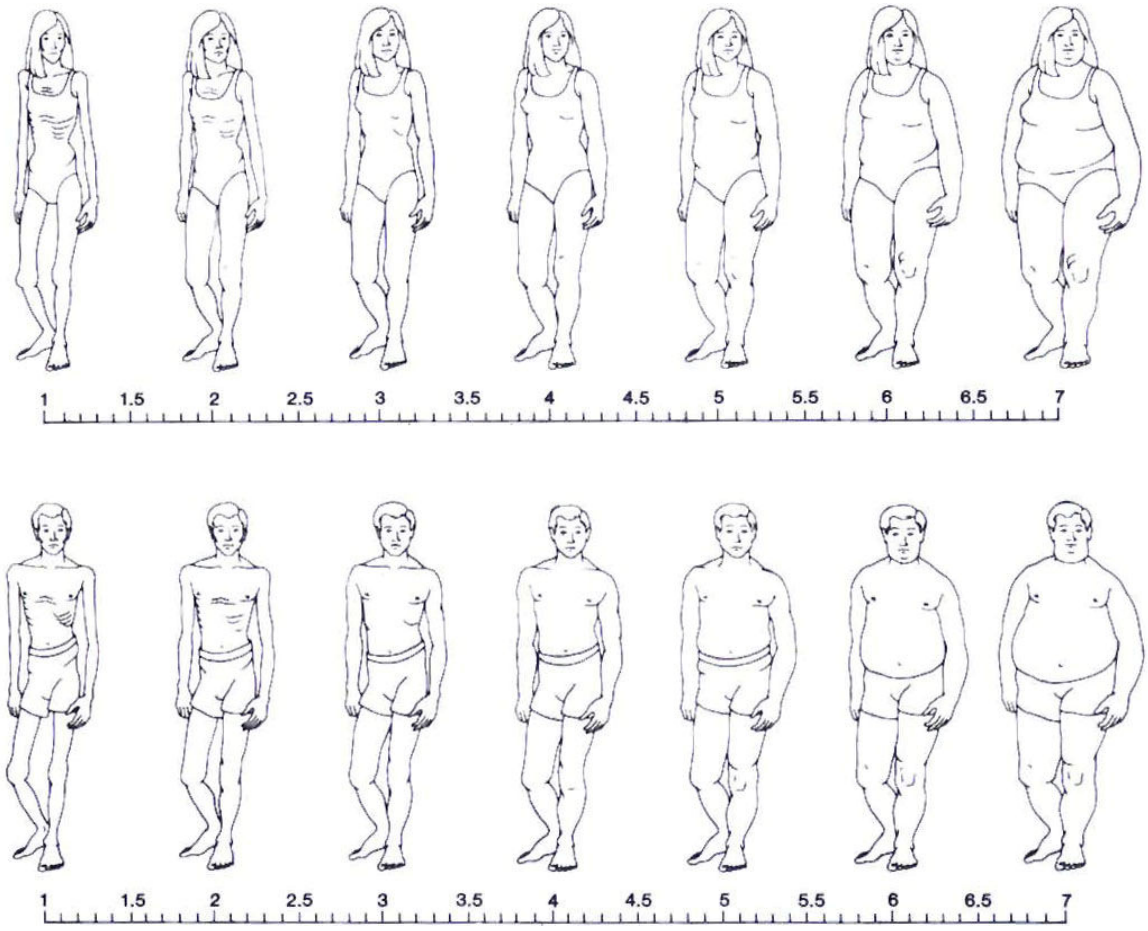
Instructions:
Now think back to the FRIENDS you listed in question number 12 and answer the next five questions.

30. Which picture looks most like FRIEND #1?



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31. In comparison to you, friend #1 exercises. . . (Pick ONE answer that you think fits best)

a. less than you do

b. about the same as you do

c. more than you do

32. Which picture looks most like FRIEND #2?

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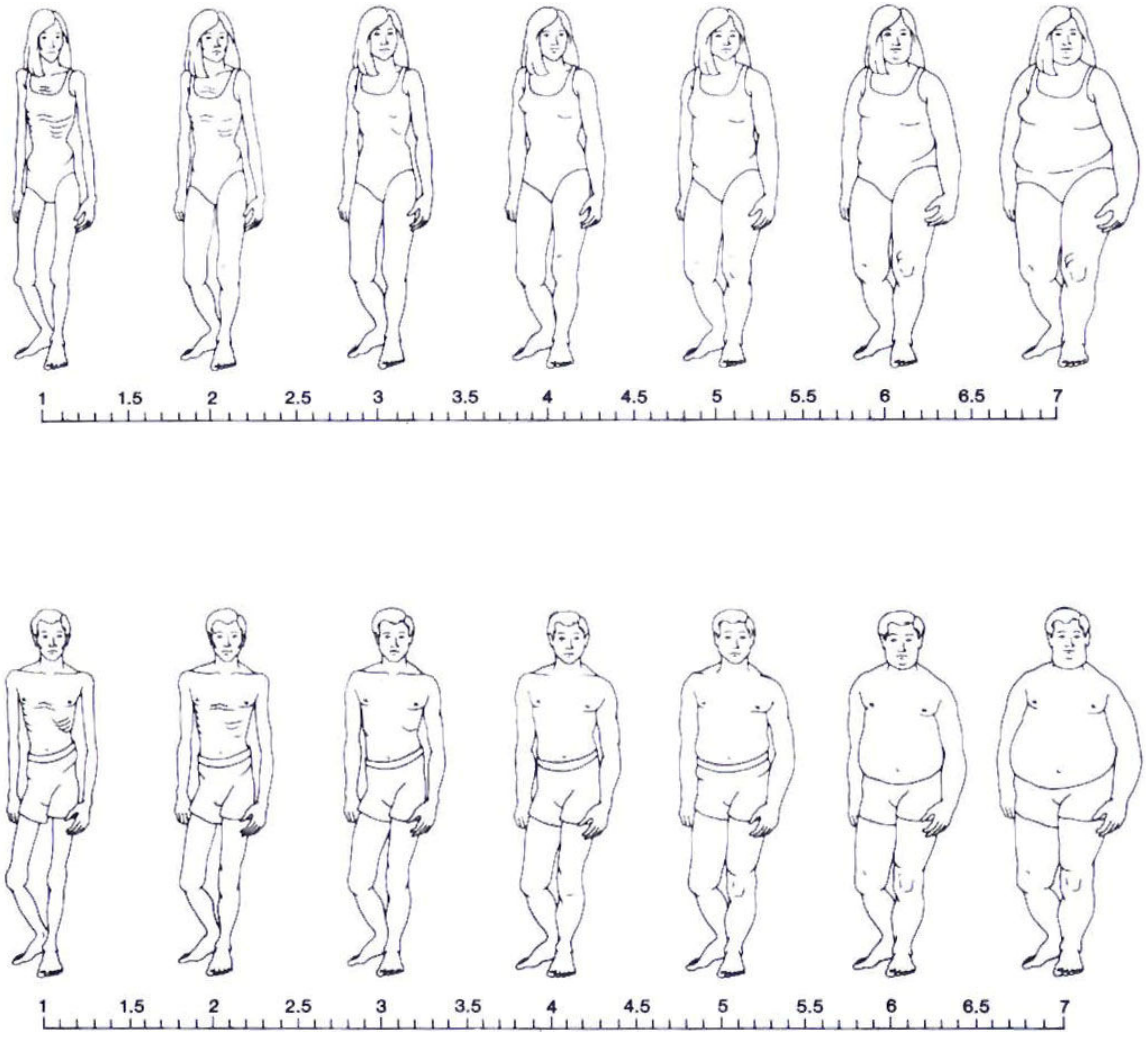
33. In comparison to you, friend #2 exercises. . . (Pick ONE answer that you think fits best)

a. less than you do

b. about the same as you do

c. more than you do

34. Which picture looks most like FRIEND #3?



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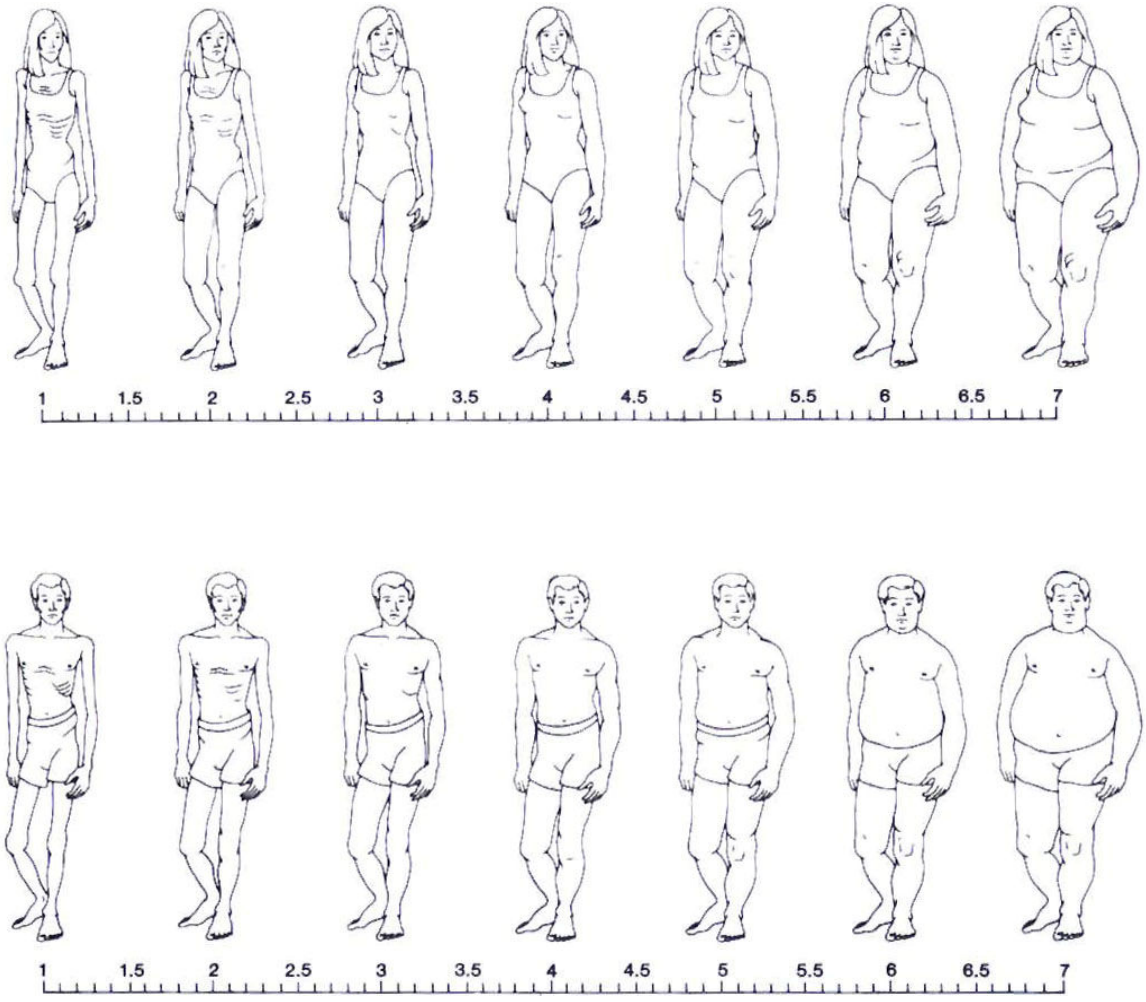
35. In comparison to you, friend #3 exercises. . . (Pick ONE answer that you think fits best)

a. less than you do

b. about the same as you do

c. more than you do

36. Which picture looks most like FRIEND #4?



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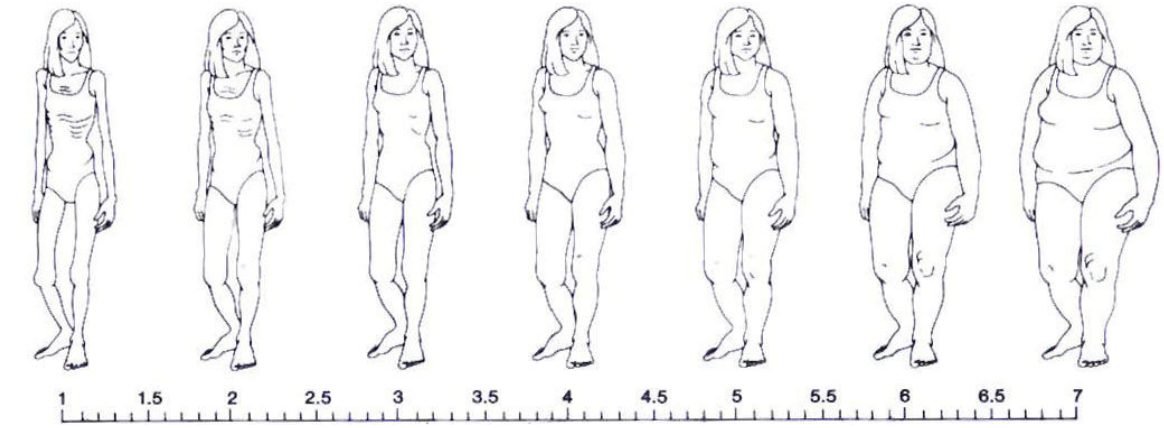
37. In comparison to you, friend #4 exercises. . . (Pick ONE answer that you think fits best)

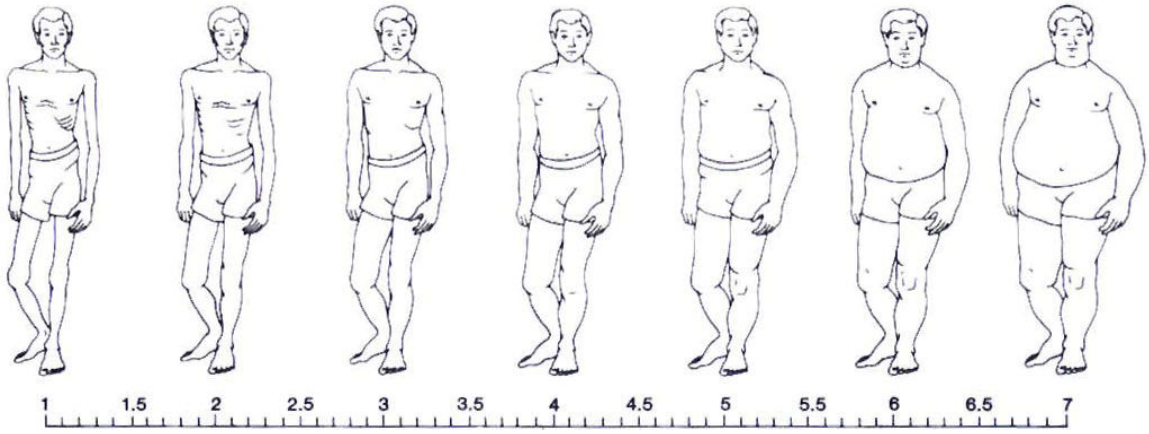
a. less than you do

b. about the same as you do

c. more than you do

38. Which picture looks most like FRIEND #5?





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39. In comparison to you, friend #5 exercises. . . (Pick ONE answer that you think fits best)

a. less than you do

b. about the same as you do

c. more than you do

Fast Food

The next series of questions will ask about eating food from fast food restaurants such as McDonalds, Burger King, Pizza Hut, or similar places.

How often in the last seven days did you…	0 times	1 time	2 times	3 times	4 times	5 or more times
40. eat food prepared at a fast food restaurant?						
41. eat food prepared at a fast food restaurant with one or more of your friends?						
42. eat food prepared at a fast food restaurant with one or more of your family members?						
43. eat food prepared at a fast food restaurant with someone other than your friends or family members?						
44. talk about how food affects your weight with one or more of your friends?						
45. talk about how food affects your weight with one or more of your family members?						

IF YOU DID NOT EAT FAST FOOD IN THE LAST SEVEN DAYS, THEN SKIP TO QUESTION #44.

46. Who were you with when you bought fast food in the last 7 days? (list up to 5 people in the spaces below)

	First name	Last name	Age	Gender
a.	_____	_____	_____ years	M or F
b.	_____	_____	_____ years	M or F
c.	_____	_____	_____ years	M or F
d.	_____	_____	_____ years	M or F
e.	_____	_____	_____ years	M or F

47. Which fast food restaurant(s) did you buy food from in the last 7 days?

a. _____

b. _____

c. _____

d. _____

e. _____

48. What food did you purchase from a fast food restaurant in the last 7 days?

_____

_____

_____

_____

Attitudes about fast food

Rate how strongly you agree or disagree with each statement in the chart below. Pick ONE answer you think fits best for each statement**.**

I think eating fast food. . .	**Strongly disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
49. will make me get fat					
50. will make me more popular					
51. tastes good					
52. is fun					
53. saves time					
54. is cheap					
55. increases the fat I eat					
56. is a way of hanging out with other friends					
57. is easy to get to					
58. is healthy for my body					

Friends' attitudes about fast food
Now rate how strongly you think the friends you listed in question 12 would agree or disagree with each statement.

My friends think eating fast food. . .	**Strongly disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
59. will make them get fat					
60. will make them more popular					
61. tastes good					
62. is fun					
63. saves time					
64. is cheap					
65. increases the fat they eat					
66. is a way of hanging out with other friends					
67. is easy to get to					
68. is healthy for their body					

How would your friends feel. . .	**Not at all upset**	**Somewhat upset**	**Very upset**
69. if they thought you didn't like fast food?			
70. if they thought you were worried that fast food might make you get fat?			
71. if they thought you believed fast food was good for your body?			

APPENDIX D

ANTHROPOMETRIC FORM

Texas A&M University "Attitudes about Food"
Version 07/29/09

DO NOT FILL OUT THIS SECTION.
This section will be filled out by the research team.

Subject Name: _____

Height: _____cm

Weight: _____kg

Waist Circumference: _____cm

Time: _____

Interviewer: _____

Collected on: ____/____/____

Organization: _____

Location: _____

VITA

Name:	Nicole Alexis Baker
Address:	Fresenius Medical Care 1340 Wonder World Drive, Ste. 401 San Marcos, TX 78666
Email Address:	nicolealexis54@yahoo.com
Education:	B.S., Nutritional Sciences, Texas A&M University College Station, 2007
Professional Experience:	Renal Dietitian Fresenius Medical Care San Marcos, TX 78666 January 2012 to present Project Coordinator Best Food for Families, Infants, and Toddlers Texas State University San Marcos, TX 78666 July 2010 to August 2011 Dietetic Internship Texas A&M University College Station, TX 77840 January 2010 to July 2010
Affiliations:	Texas Dietetic Association American Dietetic Association
Skills and Certifications:	Registered Dietitian, Commission on Dietetic Registration Licensed Dietitian, Texas State Board of Examiners for Dietitians BLS Certified, American Heart Association