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## The Impact of Childhood Obesity on Levels of Self-Esteem, Anxiety, Social Stress, Interpersonal Relationship Satisfaction, and Academic Performance among Students in the 5th, 6th, and 7th Grades

Robika Modak Mylroie

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The impact of childhood obesity on levels of self-esteem, anxiety, social stress,  
interpersonal relationship satisfaction, and academic performance  
among students in the 5th, 6th, and 7th grades

By

Robika Modak Mylroie

A Dissertation  
Submitted to the Faculty of  
Mississippi State University  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy  
in School Counseling  
in the Department of Counseling and Educational Psychology

Mississippi State, Mississippi

August 2013

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2013

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Pages in Study: 101

Candidate for Degree of Doctor of Philosophy

The purpose of this dissertation study was to examine the impact of childhood obesity on levels of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic achievement on students in Grades 5, 6, and 7. Professional school counselors need to be aware of how childhood obesity impacts students and how they can help their students personally, socially, and academically. The present research study uses a comparative research design to determine the levels of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance among students in Grades in 5, 6, and 7 between two groups: (a) obese children and (b) non-obese children. Height and weight were obtained from each student and entered into a Body Mass Index (BMI) calculator. Students completed the Behavior Assessment System for Children, Second Edition and a demographic survey. Scores from the Mississippi Curriculum Test, Second Edition were obtained as well. Students were coded as obese or non-obese and scores from the two assessments were entered into SPSS. A multivariate analysis of variance found no statistically significant results for the overall model.

However, self-esteem and interpersonal relationship satisfaction were statistically significant individually. Though there were no statistically significant differences between groups, the researcher found that the mean scores of dependent variables reflected differences between obese and non-obese groups. School counselors can use this information to utilize the American School Counselor National Model to build a program for these children. Responsive services such as individual counseling, group counseling, classroom guidance, and parent education workshops can all be applied throughout the schools. Research in the future should continue to focus on the mental health implications of childhood obesity. This study provided a new perspective for research on childhood obesity not only for school counselors, but all mental health professionals. By being aware of the possible risks associated with childhood obesity, school counselors can use early intervention and prevention strategies to make a difference not only with an obese child but also within the entire school.

## DEDICATION

I would like to dedicate this dissertation to my family. You have been my cheerleaders from the beginning and given me the best gifts of all: your love, support, and encouragement. To my husband Erik, this journey has been a long one, and you have given me the strength, comfort, and love all along the way. My parents, Ravi and Melalie Modak, you have been my best friends from the beginning! You know me better than I know myself; always believing in me which gave me strength and courage especially throughout this process. My in-laws, John and John Mylroie, thank you for your support and encouragement. To Gizmo who sat next to me for hours while I wrote (sometimes on my most important papers). And finally to my sweet Lalita, you may not realize it now, but you have motivated and inspired me in ways I didn't think possible!

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## TABLE OF CONTENTS

DEDICATION .....	ii
ACKNOWLEDGEMENTS .....	iii
LIST OF TABLES .....	vii
LIST OF FIGURES .....	viii
CHAPTER	
I. INTRODUCTION .....	1
Conceptual Framework for the Study .....	2
Statement of the Problem .....	5
Justification for Study .....	5
Purpose of Study .....	6
Variables .....	7
Independent Variable .....	7
Dependent Variables .....	7
Research Question .....	8
Definition of Terms .....	8
Summary .....	10
II. REVIEW OF LITERATURE .....	11
Definition of Childhood Obesity .....	11
Prevalence of Childhood Obesity .....	12
Impact of Childhood Obesity .....	19
Personal Impact .....	20
Physical .....	20
Self-esteem .....	21
Anxiety .....	25
Social Impact .....	27
Social Stress .....	27
Interpersonal Relationships .....	28
Academic Impact .....	31
Role of the School Counselor .....	33
III. METHODOLOGY .....	37

Research Design.....	37
Participants.....	38
Institutions.....	38
Central School.....	38
Fifth Street Junior High School .....	39
Armstrong Middle School.....	39
East Webster Elementary School.....	40
Materials .....	40
Demographic Survey .....	40
BASC-2.....	40
Self-Esteem Scale .....	42
Anxiety Scale .....	43
Social Stress Scale .....	43
Interpersonal Relations Scale.....	43
BMI Data Collection Form .....	44
MCT2.....	45
Procedures.....	45
Data Analysis .....	46
IV. RESULTS .....	48
Analysis of the Data.....	48
Demographic Characteristics .....	48
Mahalanobis Distance and Assumptions of MANOVA.....	49
Research Question .....	55
Summary of Procedures.....	56
V. DISCUSSION, LIMITATIONS, AND FUTURE RESEARCH .....	58
Summary.....	58
The Problem.....	58
Procedures.....	59
Research Question 1 .....	60
Research Results.....	60
Limitations .....	60
Discussion.....	61
Personal Impact.....	62
Self-Esteem.....	62
Anxiety.....	63
Social Impact .....	64
Social Stress.....	64
Interpersonal Relationships.....	65
Academic Impact .....	66
Academic Performance.....	66
Implications for Practice.....	66
Classroom Guidance .....	67

Group Counseling .....	68
Parent Education .....	68
Recommendations for Future Research .....	69
Conclusion .....	70
REFERENCES .....	71
APPENDIX	
A. INSTITUTIONAL REVIEW BOARD APPROVAL .....	89
B. INFORMED CONSENT FORM .....	91
C. MINOR ASSENT FORM .....	94
D. ORAL SCRIPT .....	96
E. BODY MASS INDEX SPREADSHEET FROM THE CENTERS FOR DISEASE CONTROL .....	98
F. DEMOGRAPHIC SURVEY .....	100

## LIST OF TABLES

1	Demographic characteristics of students who participated in current study (n=178). .....	49
2	Box's Test of Equality of Covariance Matrices .....	54
3	Means and Standard Deviations for Obese and Non-Obese Participants for Each Dependent Variable. ....	56

## LIST OF FIGURES

1	Histogram displaying normality for the dependent variable self-esteem. A negative skew can be seen. ....	51
2	Histogram displaying normality for the dependent variable anxiety. ....	51
3	Histogram displaying normality for the dependent variable social stress. ....	52
4	Histogram of normality for the dependent variable interpersonal relationships. A negative skew can be seen. ....	52
5	Histogram of normality for the dependent variable language. ....	53
6	Histogram of normality for the dependent variable math. ....	53
7	Bivariate scatterplot depicting linearity of the dependent variables from the BASC-2 (self-esteem, anxiety, social stress, interpersonal relationships) and MCT2 (language and math). ....	54

## CHAPTER I

### INTRODUCTION

Professional school counselors are vital to the educational system in the United States and provide numerous services to help children achieve academic success. Using a comprehensive, focused school counseling program, school counselors effectively address children's academic, career, and personal/social development (American School Counselor Association, 2013). With a growing number of challenges within the school and community environment, school counselors are in the ideal position to manage student concerns through responsive services. Numerous personal and social issues have been shown to influence students' academic performance and overall success (Chandler, Burnham, & Dahir, 2008). One issue is childhood obesity, a major concern in the United States.

Childhood obesity has become a concern in not only the United States, but also in Australia, Japan, Great Britain, and India (Boneberger et al., 2009; Cecil et al., 2005; Olds, Tomkinson, Ferrar, & Maher, 2010; Sen, Kandemir, Alikasifoglu, Gone, & Ozon, 2008; Sundblom, Petzold, Rasmussen, Callmer, & Lissner, 2008; Yoshinaga et al., 2010). Although numerous causes for childhood obesity have been examined in the literature (Birch & Ventura, 2009; Costley & Leggett, 2010; Dietz, Bland, Gortmaker, Molo, & Schmid, 2002; Levy & Petty, 2008; Pretlow, 2011; Spruijitt-Metz, 2011) the focus of this study was on the impact that obesity has on children, which is detrimental to not only

their physical health, but also to their mental well-being. Because the majority of research that relates to childhood obesity is applicable to other health practitioners, intervention and prevention methods have been designed that focuses more on physical exercise, nutrition intake, etc. Currently, there is a lack of research, intervention, and prevention strategies that would be beneficial to those in the mental health field, particularly school counselors. As previously stated, school counselors are in an ideal position to assisting children struggling with issues that result from obesity.

The goal of this study was to determine whether statistically significant differences existed between children, classified as being obese versus children classified as non-obese in the levels of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance among children in grades five through seven. In order to prepare the reader, a review of the literature related to childhood obesity, self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance will be discussed in the introductory and literature review sections of the manuscript. Statements of the problem, the purpose of the study, research questions, and brief definitions of related terms will also be presented. Finally, implications and limitations to this study will be provided at the conclusion of the chapter.

### **Conceptual Framework for the Study**

The Centers for Disease Control (CDC, 2011c) defined childhood obesity as a child having a body mass index above the 95<sup>th</sup> percentile based on his/her age and sex (Arterburn et al., 2010; Must & Strauss, 1999). Body mass index (BMI) is measured by dividing an individual's weight in kilograms by his/her height in meters squared

(Balistreri & Hook, 2009; Hergenroeder, Wert, Hile, Studenski, & Brack, 2011). If a child is overweight, he/she will have a BMI between 25.0 and 29.9 whereas those children considered obese will have a BMI over 30.0 (for imperial conversion: pounds multiplied by 703 all divided by inches squared; Arterburn et al., 2010; World Health Organization, 2011).

Unfortunately the causes of childhood obesity are more complicated than simply overeating (Lytle, 2009). Reasons that contribute to childhood obesity are rooted in emotional and genetic issues, such as a child's environment, family structure, ethnicity, gender, and socioeconomic status (Brown, Birch, Triefel, & Kancherla, 2006; Jalongo, 1999; Kimm & Obarzanek, 2002; Levy & Petty, 2008; Moens, Braet, Bosmans, & Rosseel, 2009; Moss & Yeaton, 2011; Must & Strauss, 1999; O'Dea, 2008; Puder & Munsch, 2010; Pyle, Sharkey, Yetter, Felix, & Furlong, 2006; Stamatakis, Wardle, & Cole, 2010; Sutherland, Finch, Harrison, & Collins, 2008). Furthermore, when a child becomes obese, he/she may experience even greater negative consequences.

The physical and mental impact of childhood obesity can be disturbing and have long lasting effects on the child. Children and adolescents who are overweight suffer from health issues that manifest long into adulthood. Physical concerns such as hypertension, Type 2 diabetes mellitus, coronary heart disease, metabolic syndrome, and sleep apnea are only a few of the physiological medical conditions that can emerge from childhood obesity (Boneberger et al., 2009; Costley & Leggett, 2010; Daniels, 2006; Edwards et al., 2006; Goran, Ball, & Cruz, 2003; Olds et al., 2010; Sen et al., 2008; Theodore, Bray, & Kehle, 2009).



Not only are medical conditions a consequence for children and adolescents, but emotional health is also challenged. The media and society in particular can damage emotional health by placing additional and unnecessary stress on youth. For example, in the media a child who is obese is said to be representative of over-consumption, vulnerability, and a lack of discipline (Maher, Fraser, & Lindsay, 2010). Additionally, children see actors, actresses, and models who are extremely thin or extremely muscular. Consequently, children may internalize these views as being what is expected of them.

Children who are obese may suffer from mental health concerns. Studies demonstrated that weight influences levels of anxiety and self-esteem (Boneberger, von Kries, Milde-Busch, Bolte, Rochat, & Ruckinger, 2009; Braet, Mervielde, & Vandereycken, 1997; Burrows & Cooper, 2002; Goodman & Whitaker, 2002; Hesketh, Wake, & Waters, 2004; Israel & Ivanova, 2002; Jansen, Smeets, Boon, Nederkoorn, Roefs, & Mulkens, 2007; Must & Strauss, 1999; Nowicka, Hoglund, Birgerstam, Lissau, Pietrobelli, Flodmark, 2008; Puder & Munsch, 2010; Pyle, 2006; Raj & Kumar, 2010; Wang, Wild, Kipp, Kuhle, & Veuglers, 2009). There may also be a connection between obesity and peer relationships and academic performance. Overweight children may be bullied or teased, leading to lower levels of self-esteem. Studies demonstrate that lower levels of self-esteem are associated with anxiety, stress, loneliness, and depression (Goodman & Whitaker, 2002; Theodore et al., 2009; Wang et al., 2009). Struggles with peer relationships may also lead to an increased sense of social stress and poor interpersonal relationships (Montague, Cavendish, Enders, & Dietz, 2010; Mowat, 2010; Wade, Cameron, Morgan, & Williams, 2011). Low self-esteem has been correlated with poor academic performance (Ballard & Alessi, 2010; Datar & Sturm, 2006; Hunt, 2008;

Judge & Jahns, 2007; Taras & Potts-Datema, 2005; Wang & Veugelers, 2008; Wittberg, Cottrell, Davis, & Northrup, 2010; Wittberg, Northrup, & Cottrel, 2009). Although correlations among the variables of self-esteem, peer relationships, and academic performance have been demonstrated, no studies have examined the influence of childhood obesity on all of these factors.

### **Statement of the Problem**

Childhood obesity has become a concern in developed countries throughout the world (Boneberger et al., 2009; Cecil et al., 2005; Olds et al., 2010; Sen et al., 2008; Sundblom, Petzold, Rasmussen, Callmer, & Lissner, 2008; Yoshinaga et al., 2010). Many research studies have focused on the causes of obesity as well as physical strategies for lowering obesity rates (Birch & Ventura, 2009; Costley & Leggett, 2010; Dietz et al., 2002; Levy & Petty, 2008; Pretlow, 2011; Spruijitt-Metz, 2011); however, very little research has examined the impact of childhood obesity on mental well-being. Understanding this impact may help school counselors with designing programs to prevent children from suffering mental health struggles along with their physical struggles of weight control

### **Justification for Study**

According to the CDC (2011b), Mississippi's obesity rate has been over 30% for the past six years. The CDC also reports that 17% of children are considered obese in the United States with Mississippi's children having the nation's highest obesity rate (CDC, 2011c). Although these obesity rates are alarming, Mississippi's student academic performance in public schools is also below average in the U.S. with Mississippi Public

Schools ranking as 49<sup>th</sup> in the United States (National Center for Education Statistics, 2011a; National Center for Education Statistics, 2011b; Best Educated Index Statistics, 2011). The need for intervention for both healthy living and increased academic rankings are clear.

School counselors can offer interventions that focus on personal, social, and academic growth. However, there is very little literature that examines the impact of childhood obesity on personal, social, and academic issues. Likewise, there is very little research demonstrating effective strategies for counseling children who are obese. Understanding the child as a whole is important when discovering what could also contribute to low self-esteem, poor social skills, and academic performance in children who are obese. Factors such as type of school, socioeconomic status, gender, and ethnicity have contributed to the child's obesity and overall well-being. For example, Nowicka et al. (2009) found that age and gender of an obese adolescent, particularly girls, impact self-esteem levels. As obese adolescent girls grew older, their self-esteem level decreased. However, research has not determined whether obesity precedes or follows current personal, social, and academic concerns (Vila et al., 2004), but identifying which comes first may not be as important as knowing what to do with the outcomes. Schools can be a primary site for developing prevention and intervention services for children who are overweight (Nauta et al., 2009), as well as the environment in which obese children and adolescents are bullied and teased.

### **Purpose of Study**

Given that childhood obesity is a rising concern throughout developed countries in the world, it is critical that school counselors fully understand the impact that weight

can have on a student's academic, career, and personal/social endeavors. The purpose of the current study was to determine whether significant differences exist on measures of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance in students classified as obese versus students classified as non-obese.

## **Variables**

### **Independent Variable**

The independent variable in the current study was childhood weight, which consisted of the categories of non-obese and obese. Both non-obese and obese are described for children as the individual's weight in kilograms divided by his/her height in meters squared (Balistreri & Hook, 2009; Hergenroeder et al., 2011). Children who are in the non-obese category are characterized by having a BMI under the 85<sup>th</sup> percentile. The CDC describe a child aged 2-19 to be overweight if he/she has a BMI at or between the 85<sup>th</sup> percentile and the 95<sup>th</sup> percentile and can be defined as obese if he/she is above the 95<sup>th</sup> percentile in accordance with the BMI based on his/her age and sex (Arterburn et al., 2010; CDC, 2011c; Must & Strauss, 1999). For the purpose of this study, BMI for overweight and obese children were categorized together as obese with BMI at or above the 85<sup>th</sup> percentile.

### **Dependent Variables**

The dependent variables for this study included scores on the Mississippi Curriculum Test, 2<sup>nd</sup> Edition (MCT2) for language arts and math , as well as scores for self-esteem, anxiety, social stress, and interpersonal relations on the Behavior

Assessment System for Children, Second Edition (BASC-2). Borderline or clinically significant scores for each scale were considered noteworthy.

### **Research Question**

The current study included the following research question:

Is there a statistically significant difference between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship, and academic performance?

### **Definition of Terms**

- **Academic Performance:** For purposes of this study, academic performance will be measured by language and math scores from the MCT, 2<sup>nd</sup> Edition (MCT2) in language and mathematics.
- **Anxiety:** feelings of fear, apprehensiveness, and threat that have been brought about by another entity (Senturk, 2011). For the purpose of this study, levels of anxiety will be determined through use of the BASC2 anxiety scale.
- **Childhood Obesity:** For the purpose of this study, childhood obesity will include children whose BMI measurement is classified as both overweight and obese. A child who is overweight will be in the 85<sup>th</sup> to 95<sup>th</sup> BMI percentile based on his/her age and sex, while a child who is considered obese will be above the 95<sup>th</sup> percentile based on his/her age and sex (Arterburn et al., 2010; CDC, 2011c; Must & Strauss, 1999).

- Ethnicity: a group's socially constructed common characteristics such as language, beliefs, values, and norms (Hays, 1996). This study will include White/Caucasian, African-American, Hispanic/Latino, Asian/Pacific Islander, Southeast Asian/Indian/Pakistani, African (from Africa), Biracial/Mixed Race, Middle Eastern, and other.
- Generalized Anxiety Disorder: characterized by at least 6 months of persistent and excessive anxiety and worry (Diagnostic Statistical Manual-IV-TR, 2000)
- Interpersonal Relationship: meaningful affiliation between an individual and others which can lead to internal satisfaction, additional positive bonds with others, and positive external experiences (Montague et al., 2010; Mowat, 2010; Wade et al., 2011). For the purposes of this study, interpersonal relationship will be defined as any positive or negative meaningful relationship between the participant and others that result in significant emotions and experiences and will be measured using the BASC2 interpersonal relationship scale.
- Self-esteem: the way in which an individual feels about him/herself behaviorally, mentally, and affectively (Blascovich & Tomaka, 1991). For the purpose of this study, self-esteem will be defined as the positive or negative internal emotion that an individual may feel about him/herself and will be measured using the BASC2 self-esteem scale.
- Social Stress: Stress, composed of feelings of tension, pressure, and lack of coping outlets, brought on by interactions with peers and others. For the

purpose of this study, social stress will be defined as the pressure or anxiety associated with making friends and/or interacting with others (Reynolds & Kamphaus, 2004) and will be measured by the BASC-2 social stress scale.

- Socioeconomic Status: the measurement of income, education, occupation, or a combination of these (Winkleby, Jatulis, Frank, & Fortmann, 1992).

This study will determine socioeconomic status by examining free/reduced lunch program participation.

### **Summary**

Childhood obesity continues to be a problem for many children and adolescents, especially in Mississippi, and may impact their personal, career, and social/personal developmental. School counselors are in a primary position to assist children struggling with issues related to weight; therefore it is critical that the impact of obesity be examined. The current study examined the impact of obesity on levels of self-esteem, social stress, anxiety, interpersonal relationship, and academic performance among children in Grades 5, 6, and 7. The following chapter will expand on the concepts presented in this chapter and provide a review of literature related to childhood obesity, self-esteem, anxiety, social stress, interpersonal relationships, and academic performance.

## CHAPTER II

### REVIEW OF LITERATURE

The primary purpose of the current investigation was to determine if levels of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance were statistically significantly different between students who were obese versus non-obese. The literature review was designed to provide the reader with a foundation for the present study. As such, the chapter will begin with a definition and discussion regarding self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance as related to childhood obesity. The chapter will conclude with a justification for the current study.

#### **Definition of Childhood Obesity**

Weight for children is designated by BMI, measured by dividing an individual's weight in kilograms by his/her height in meters squared (Balistreri & Hook, 2009; Hergenroeder et al., 2011). Children ages 2-19 can be placed into three categories: healthy or normal weight, overweight, and obese. An exact healthy BMI is not specified by the CDC because of weight changes for sexes by age. However, BMI can be calculated for both overweight and obese children. According to the CDC a child aged 2-19 is considered overweight if he/she has a BMI at or between the 85<sup>th</sup> percentile and the 95<sup>th</sup> percentile and can be defined as obese if he/she is above the 95<sup>th</sup> percentile in



accordance with the BMI based on his/her age and sex (Arterburn et al., 2010; CDC, 2011c; Must & Strauss, 1999). These definitions of overweight and obese for children have been accepted as the current classification throughout the literature.

For the purpose of this study, both overweight and obese will be categorized as obese. Therefore, children whose BMI is at or above the 85<sup>th</sup> percentile will be considered obese.

### **Prevalence of Childhood Obesity**

In recent years, childhood obesity has captured not only media attention, but the attention of schools, the medical field, and the mental health field. Studies have shown that childhood obesity has become a common problem in several countries including the United States (Boneberger et al., 2009; Olds et al., 2010; Sen et al., 2008; Sundblom et al., 2008; Yoshinaga et al., 2010;). Though countries such as Japan, Australia, and Sweden have seen a stabilizing trend in obesity rates in children, researchers believe it is still a critical issue (Olds et al., 2010; Sundblom et al., 2008; Yoshinaga et al., 2010;). The economy is also affected by the increase in the treatment of obesity with problems continuing from childhood through adulthood (Daniels, 2006; Riggs, Sakuma, & Pentz, 2007; Theodore et al., 2009; Wang & Dietz, 2002). Pyle et al. (2006) reported that the nation's health care system has suffered extremely as a result of treating obesity in children and adults.

The CDC report that 17% of children in the United States are considered obese (CDC, 2011c). According to Nauta et al. (2009), obesity in children has risen considerably over the past two decades with the rate increasing from 6.5% in 1980 to 17% in 2009. The World Health Organization (WHO) believes that almost 2.3 billion

adults will be overweight by 2015 and over 700 million of those adults will be obese (Rees, Thomas, Brophy, Knox, & Williams, 2009). These predictions are more disheartening because today's adolescents will be considered part of this population.

Mississippi's adult and childhood obesity rate at 30% is the highest in the nation (CDC, 2011b; National Survey of Children's Health, 2011). Studies suggest family based interventions and support are important in contributing to decreased obesity (Birch & Ventura, 2009; Edwards et al., 2006; Flodmark, 2005). However, familial support is not always simple to obtain when the families themselves are struggling with obesity. Schools have been used as the means to integrate new interventions and prevention methods because children and adolescents spend the majority of their week in school (Birch & Ventura, 2009; Dietz et al., 2002). Schools are ideal because several programs are already in place such as recess, physical education, nutrition and health classes, and low fat and low calorie lunch menu options (Birch & Ventura, 2009). Though many schools have put in place prevention methods such as new lunch menus and physical fitness/exercise programs, the rates are not falling. Programs based in the school have not been found to consistently provide positive results (Birch & Ventura, 2009).

This increase in childhood obesity rates has been attributed to several factors involving lifestyle choices. Levy and Petty (2008) suggest that several variables play a role in obesity such as the interaction of nutrition, psychosocial issues, family, and psychology of the child. Though children may be active in sports programs with their schools and communities, technology has had an impact on how much children stay inside. Children are thought to be more involved in sedentary activities, such as video games and television, and may participate less in physical activities outside hence

becoming more inactive (Costley & Leggett, 2010 Rees et al., 2009). The use of cellular phones, computer games, and social sites have become more entertaining to children than taking walks or riding bikes.

Other factors that may be linked to childhood obesity are demographic characteristics such as a child's genetic make-up, gender, ethnicity, socioeconomic status, family structure, and general environment. Differences among females and males with respect to weight have been recorded as early as fourth grade (Pyle et al., 2006) Females have been found to have difficulty with body image between the two genders (Daniels, 2006; Goodman & Whitaker, 2002). Whether the influential cause is media, reality television, or peer influence that dictates beauty through weight, females have much higher rates of eating disorders than males (Jalongo, 1999; Pyle et al., 2006). Females were found to be more focused on weight than males (Brown et al., 2006). Research has found that females have a fear of fatness and begin dieting at early ages (Brown et al., 2006; Must & Strauss, 1999). Females are more likely to believe themselves to be overweight and talk or worry about their weight when compared with males (Brown et al., 2006). However, males who are involved in physical activities may also suffer from body image issues (Sutherland et al., 2008) because certain sports require athletes to be a particular weight, such as wrestling.

Both females and males may compare themselves with images of what is considered attractive in society. Instead of calculating BMI, which is not usually defined for children and adolescents, they base their weight on unrealistic images of celebrities or models. This view can affect how they perceive themselves and can, in turn, have a negative effect on self-esteem.

A child or adolescent's ethnicity can influence his/her idea of overweight or obese. The CDC (2011a) reported that in the U.S. African-Americans had the highest obesity rate at 51% and Hispanics had the second highest rate at 21%. Childhood rates mirrored these results. Moss and Yeaton (2011) found Hispanic children to be at greater risk for obesity by the age of 2 while Asian/Pacific Islander children had the least risk. Conversely, in a study conducted in Australia by O'Dea (2008), Asian and Pacific Islander children were found to be more likely to be obese than Caucasian and Asian girls in particular. This could be attributed to the Westernization of cultures with fast food restaurants and foods with higher sugar and fat being more common in their diet (Davis et al., 2004).

The African-American community was found to have greater acceptance for obesity of girls in particular (CDC, 2011a; Kimm & Obarzanek, 2002; Mackey & La Greca, 2008;). In an Australian study, Aboriginal, Middle Eastern/Arabic, and Pacific Islander girls who were considered obese in measurement did not think themselves to be obese (O'Dea, 2008). This difference in cultural acceptance of body weight is not uncommon. The idea of having a shapely or full-bodied figure can represent nobility for Pacific Islanders (Davis et al., 2004). African-American women have been found to have a more positive outlook about obesity than Caucasian women and men and African-American men (Latner, Stunkard, & Wilson, 2005). This attitude can influence girls in how they perceive themselves. Though the concept of positive esteem is rewarding, obesity is not and, as discussed previously, can have detrimental effects on a child physically and mentally.

In conjunction with ethnicity, socioeconomic status (SES) appears to be one of the most significant factors that influence childhood obesity. Ethnic minorities with lower SES (socioeconomic status) tend to have higher ratings of obesity in children (Levy & Petty, 2008). Children and adolescents who come from a low SES area tended to be overweight or obese at a higher rate than those from a higher SES (Kimm & Obarzanek, 2002; Levy & Petty, 2008; Pyle et al., 2006; Rees et al., 2009; Stamatakis et al., 2010; Sutherland et al., 2008;). Trends in SES and childhood obesity are being seen throughout the nation as well as other countries (O’Dea, 2008; Raj & Kumar, 2010; Stamatakis et al., 2010). Parental level of education as well as income appear to be linked with childhood obesity (Balistreri & Van Hook, 2009; Pitrou, Shoejoei, Wazana, Gilbert, & Kovess-Masfety, 2010)

Low-income families are unable to buy food that is more nutritious because it tends to be expensive. Stamatakis et al.’s (2010) research suggested that though middle and upper class children had shown stabilization in obesity trends in England, children from lower SES have not shown this trend. Similarly, another study conducted in the United Kingdom found that students from schools with high levels of poverty were more likely to be overweight or obese (Cecil et al., 2005).

Trends such as these are also seen among children and adolescents within the United States. Moss and Yeaton (2011) based SES on parents’/guardians’ occupations, income, and levels of education. They found that those children with the lowest SES were at the highest risk for obesity. This tendency appears as well with children of Hispanic parents with low education levels (Balistreri & Van Hook, 2009). In another study, children who were attending public schools were more likely to be overweight than their

private school counterparts despite SES (Li & Hooker, 2010). However, students who participated in the school based lunch and breakfast programs at their schools had a likelihood of being overweight. The study did not indicate the number of students who received these meals as free/reduced which would suggest how many students had a low SES.

Family structure could also contribute to childhood obesity. Eating patterns, number of siblings, and parent/guardian involvement are possible influences on obesity (Puder & Munsch, 2010). Psychological state and stress of parents/guardians can lead to obesity as well (Moens, Braet, Bosmans, & Rosseel, 2009; Puder & Munsch, 2010). Families with working parents or single parent households could follow patterns for obesity as parents who are not in the home may not be able to monitor children's eating behaviors or amount of physical activity. Meals from restaurants and pre-prepared meals such as TV dinners may be easier for parents to give to children; however, these meals are usually high in sodium and caloric content (Anderson & Butcher, 2006).

Families with several children may be less inclined to be obese because there are more opportunities to have playmates and be active (Crawford et al., 2010; Moens et al., 2009). On the other hand, several children in the home can reduce playtime if children are watching television or playing video games with each other.

A child's environment can easily influence his/her physical or sedentary behavior which, in turn, can lead to a child being overweight or obese (Crawford et al., 2010). Physical activity is necessary for not only physical health but mental and emotional wellbeing, academic achievement, and self-esteem (Canadian Paediatric Society, 2002; Gilliland, Holmes, Irwin, & Tucker, 2006; Oliver et al., 2011).

In rural areas, neighborhoods are spread farther apart making it difficult for children to play with friends or get involved in recreational activities (Harrell, Davy, Stewart, & King, 2005; Nelson, 2005). A child would have to be taken by car to the house rather than being able to ride his/her bicycle or walk (Norman et al., 2006; Roemmich, Epstein, Raja, & Lin, 2007). Restrictions on playtime outside after dark can inhibit physical activity especially during daylight savings time when nightfall is earlier and children could be coming home later from school because of after school programs (Crawford et al., 2010). When neighborhoods are considered dangerous because of gangs or high traffic, children have to stay indoors which increases inactivity (Jago, Baranowski, & Baranowski, 2006; Crawford et al., 2010). Single or working parent environments could increase likelihood of staying indoors as models of physical activity are not displayed nor is playtime with parents (Nauta et al., 2009; Crawford et al., 2010). Not surprisingly, when recreational facilities and neighbors are closer, physical activity is more likely to occur (Roemmich et al., 2007). Playgrounds, sidewalks, parks, and having peers close by could lead to increased physical activity. Access to grocery stores, restaurants, fast food chains, and fresh markets can play a role in childhood obesity as well. In a study by Jago et al. (2006) interestingly only sidewalks were found to contribute to physical activity though activities may be associated with jogging or walking because children can walk to school or to a friend's house using a sidewalk.

Despite the factors that may contribute to childhood obesity, the mental health of an obese child is often overlooked. Rayner (2005) notes that realistic role models such as parents, teachers, and health care providers should take responsibility for their own health as well as lending support to the children. Schools and health care providers often focus

on activity and nutritional information regarding obesity. However, positive mental health can be at stake for a child who is being harassed at school or at home about his/her weight. While family support has shown to be helpful in decreasing obesity, family members may also be the ones criticizing or teasing the individual which can further damage his/her mental health (Faith, Leone, Ayers, Heo, & Pietrobelli, 2002; Flodmark, 2005). In such a case, weight loss and diet should not be the only focus. Rather, understanding the whole child and developing coping strategies may be a more logical option (Flodmark, 2005). The impact of childhood obesity is not only physical, but mental and emotional as well. Helping a child recognize and be aware of his/her emotions from within first may be useful when attempting to change eating and exercise habits.

### **Impact of Childhood Obesity**

Much of the research about childhood obesity focuses on the physical health issues associated with obesity. It also notes the importance of health care providers, nutritionists, and health teachers in the schools. However, being overweight also impacts a student's personal, social, and academic growth. Childhood obesity has been linked to poor self-esteem, poor peer relations, anxiety, aggression, body image issues, and depression (Boneberger et al., 2009; Burrows & Cooper, 2006; Daniels, 2006; Datar & Sturm, 2006; Goodman & Whitaker, 2002; Gray, Kahhan, & Janicke, 2009; Perreira & Ornelas, 2011; Puhl & Latner, 2007; Pyle et al., 2006; Rayner, 2005; Riggs et al., 2007; Theodore et al., 2009;). These issues can continue into adulthood, and without professional help, the adult may become very unstable.



Without essential positive emotional health throughout child and adolescent development, other areas of a person's life can deteriorate. For example, an obese fifth grader who is being teased about her size may become passive. She may not tell the teacher or another adult what is happening, and therefore, is teased more. Because of the teasing, she can no longer concentrate on her school work and her grades begin to fall. Conversely, if she becomes aggressive, she herself may become the bully and harass other children consequently getting into trouble at school and at home. In either situation, this student has a likelihood of suffering from low self-esteem and, as a result, can lose friends. Without proper help, this student could endure a downward spiral of grades and emotional welfare.

Though there are many problems that could occur as a result of childhood obesity, there are five factors (self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance) in particular that are of interest to this study because of their powerful impact on children and adolescents' developmental success. The following section discusses the personal, social, and academic impact of childhood obesity.

### **Personal Impact**

Childhood obesity can impact children physically as well as mentally. This section will discuss the impact of childhood obesity on not only the physical well-being of the child, but also on the levels of self-esteem and anxiety.

**Physical.** Several physical health concerns are initiated by childhood obesity. Asthma was found to be associated with childhood obesity, gender, race, environmental

health, and education level of the household (Ahmad et al., 2009). In related research, decreased lung functions in children who are overweight resulted in allergic diseases including bronchial asthma (Kusunoki et al., 2008). Hypertension, Type 2 diabetes, heart disease, and sleep apnea can also result from childhood obesity (Costley & Leggett, 2010; Edwards et al., 2006; Goran et al., 2003; Olds et al., 2010; Sen et al., 2008; Theodore et al., 2009;). Sen et al. (2008) also noted the prevalence of metabolic syndrome in obese children in a university clinic setting.

**Self-esteem.** Self-esteem is the way that an individual feels about his/herself behaviorally, emotionally, and affectively (Blascovich & Tomaka, 1991). Self-esteem can involve positive or negative emotions and is usually labeled as high self-esteem or low self-esteem. A child's body weight has been found to impact self-esteem (Hesketh et al., 2004; Israel & Ivanova, 2002; Jansen et al., 2007; Must & Strauss, 1999; Wang et al., 2009). Self-esteem can impact other facets of a child or adolescent's life such as aggressive tendencies or body image issues. Body image has been found to be significant factor when examining sense of self (Asci, Gokment, Tiryaki, & Alper (1997). In particular, girls who have low self-esteem have been found to suffer from body dissatisfaction (Burrows & Cooper, 2002). This can also be linked with symptoms of depression (Burrows & Cooper, 2002; ; Daniels, 2006; Goodman & Whitaker, 2002; Raj & Kumar, 2010; Sheslow, Hassink, Wallace, & DeLancy, 1989). Goodman and Whitaker (2002) note that little research examines children and adolescents' relationship with obesity and depression; however, their research found that depression was associated with obesity in this particular age group. Research has found that as depression increases in obese children, self-esteem decreases with features such as anxiousness and behavior

problems more likely (Sheslow et al., 1989). As children become more inclined to worry about body image and/or general appearance, psychosocial problems may interfere. Raj and Kumar (2010) suggest that these problems such as obsessive concern with body image, anticipation of rejection, withdrawal, poor self-esteem, and depression are more likely if a child is obese.

Hesketh et al. (2004) suggest that increased BMI can cause low self-esteem rather than the inverse. Children and adolescents who are overweight or obese may be teased and harassed which can decrease self-esteem. In turn, other social and mental health problems may stem from having low self-esteem. Children and adolescents concerned with weight may be more inclined to have difficulty when coping with low self-esteem issues and behaviors related to these issues. Low self-esteem has been associated with high levels of conduct problems (Barry, Frick, & Killian, 2003; Ha, Petersen, & Sharp, 2008). Adolescents with low self-esteem demonstrated poorer mental health, inadequate physical health, less economic prospects, and a likelihood of developing criminal behavior in adulthood when compared to their higher self-esteem counterparts (Ha et al., 2008). Internalizing problems were found to be indicative of self-esteem issues as well as introversion, and emotional instability (Braet, Mervielde, & Vandereycken, 1997; De Pauw, Mervielde, De Clercq, De Fruyt, Tremmery, & Deboutte, 2009). Risky behaviors are also problematic for children and adolescents who have low self-esteem (Geckil & Dunder, 2011; Wild, Flisher, Bhana, & Lombard, 2004). Many adolescents with low self-esteem tend to be less likely to engage in physical activity and a high intake of non-nutritious food which can contribute to obesity (Geckil & Dunder, 2011). Girls with poor body image and low self-esteem were more likely to engage in behaviors such as drug

abuse, suicidal behavior, alcohol abuse, cigarette use, and sexual behavior (Wild et al., 2004). When studied, obese girls tended to have lower self-esteem than boys (Burrows & Cooper, 2002; Israel & Ivanova, 2002; Wang et al., 2009). This could occur because of the media's ideal image of an attractive female form which may appear to be underweight or normal weight rather than overweight or obese. Girls may compare their bodies to those of celebrities and models and have inferior senses of body image (Cahill & Mussap, 2007). Conversely, obese boys were found to have higher self-esteem than moderately overweight boys most likely because they are found to be useful for athletic activities such as football or weight-lifting (Israel & Ivanova, 2002). Boys may see images of male athletes and attempt to look more like them. These models usually can have various body types depending on the sport and position played. Asci et al. (1997) found that participating in physical activity such as athletics increases boys' overall self-concept. Research has also shown that having lower body fat was indirectly related to higher self-esteem because adolescent males who played sports had higher athletic competence and positive body images (MacKinnon et al., 2003).

In a few studies, obesity was found not to be linked with self-esteem but rather with the demographic variables of gender and age or certain characteristics of the child (Braet et al., 1997; Nowicka et al., 2009). Nevertheless, a majority of research implies obesity influences a child's self-esteem.

Parental obesity and self-esteem influence a child's weight and self-esteem. If a parent is obese then the child is more than likely going to be obese as well. If a parent is buying non-nutritious foods, the child will most likely be eating the same foods because he/she has no choice (Puder & Munsch, 2010). Lack of exercise and daily physical

activity could also be modeled by the child if the parent has no routine and lives a sedentary lifestyle. A combination of both eating poorly and low physical activity can impact a child's lifestyle. In addition, parent self-esteem may also be modeled to the child. If obesity causes low self-esteem, then it can be concluded that an obese parent with low self-esteem can only model that behavior (Epstein, Klein, & Wisniewski, 1994). In a study by Epstein et al. (1994), parental obesity and psychiatric symptoms had a strong correlation for obese children who had psychological problems. If children are modeling their parents' poor eating and exercise habits as well as poor self-esteem among other mental health problems, they may feel powerless to make changes.

Children with low self-esteem or self-perception have difficulty adapting to social situations and making friends (Banis et al., 1988; Braet et al., 1997; Puder & Munsch, 2010). Loss of friends and social interactions can also have an impact on self-esteem and an individual's own self-perceptions. Children with higher physical self-esteem also have higher social competence (Braet et al., 1997) A child who has a high self-esteem may feel more confident meeting new peers. A child who remains obese, may have trouble interacting with others in the future as an adult. If a child or adolescent is unsatisfied with one part of his/her life, then the other parts will also become hard to maintain (Braet et al., 1997). Social relations, stress, anxiety, and concentration in school can become difficult to manage when self-esteem is low.

Increasing self-esteem can lead to balance in other aspects of a child's life (Braet et al., 1997; Wild et al., 2004). As self-esteem increases, the child feels good about him/herself and is able to focus on maintaining this healthy balance. Personal, social, and academic growth may be positively influenced by developing a high self-esteem

(Carranza, You, Chhuon, & Hudley, 2009; Scott & de Barona, 2011). Peer and familial relationships may become more positive and interactions with others may also be fulfilling. Though much focus has been based on physical activity and appearance, self-esteem cannot be overlooked as an important part of a child's health.

**Anxiety.** Anxiety can be defined as the feelings of fear, apprehensiveness, and threat that have been brought about by another entity (Senturk, 2011). Generalized anxiety disorder is defined by the Diagnostic Statistical Manual IV-TR (2000) as an individual experiencing at least six months of constant and excessive anxiety and worry. This is one of the many internalized behaviors including depression and social cognitions that can become challenging for a child or adolescent to control (Braet et al., 1997; Epstein et al., 1994; Vila et al., 2004; Puder & Munsch, 2010). Anxiety disorders have been associated with children who have high BMIs (Anderson, Cohen, Naumova, & Must, 2006; Pitrou et al., 2010; Van Vlierberghe, Braet, Goossens, & Mels, 2009; Vila et al., 2004). Increased anxiety was found to be linked with emotional eating and loss of control (Goossens, Braet, Van Vlierbergh, & Mels, 2009). In other words, when a child's anxiety was high, he/she began to eat as a coping method. Though this may imply that the child has anxiety and then emotionally eats, the inverse could be true as well. A child who is already obese may have increased anxiety because of other internalizing and externalizing factors and thus loses control and eats more.

Studies have shown that weight and anxiety disorders were associated with one another (Anderson et al., 2006; Epstein et al., 1994; Rofey et al., 2009). The impact of anxiety on a child who is obese can be damaging and can become comorbid with other psychological disorders, in particular, depression (Anderson et al., 2006; Epstein et al.,

1994). This has been found to be particularly true with females who are obese (Anderson et al., 2006). Obese children and adolescents may try to avoid social situations and other events that increase anxiety because they are continuously thinking about how they feel about themselves as well as how others might perceive them (Jansen et al., 2007).

Therefore, obese children and adolescents with anxiety may withdraw from society.

Weight gain may also increase for an obese child because the anxiety could influence the likelihood of participating in physical activity and increase the likelihood of emotional eating (Rofey et al., 2009). Seeing images of ideal body types through the media have also been found to increase anxiety and depression in women (Cahill & Mussap, 2007). Children and adolescents are exposed to this representation of the ideal body types early in life and may feel anxiety and pressure to look like these models.

As anxiety appears to be a prominent issue for children who are obese (Van Vlierberghe et al., 2009), pressure surmounts as to how to help them rationalize their irrational thoughts and behaviors. Children and adolescents may begin to avoid people, places, and situations in order to evade interactions (Jansen et al., 2007). Avoiding and escaping moments when they are conscious about their weight can be exhaustive and may lead to other disorders comorbid with anxiety; mainly depression (Anderson et al., 2006; Cahill & Mussap, 2007; Epstein et al., 1994; Rofey et al., 2009; Van Vlierberghe et al., 2009). Obesity can not only have an impact on the personal mental health and wellbeing of a child or adolescent but a social impact as well. Anxiety can cause individuals to fear social situations and interactions with others. Therefore, it is imperative that the social impact of childhood obesity is addressed.

## **Social Impact**

Childhood obesity can affect children and adolescents' social well-being. This section will discuss the impact of childhood obesity on the internal pressure of socializing as well as social interactions with others.

**Social Stress.** Social stress includes the feelings of tension, pressure, and poor coping ability when interacting with peers (Reynolds & Kamphaus, 2004). Social stress can also be defined as regular sources of stress that must be managed by individuals, such as daily hassles and transitioning to new schools (Choi, Meininger, & Roberts, 2006). Being overweight or obese can amplify social stress and functioning (Pitrou et al., 2010; Puder & Munsch, 2010; Vila et al., 2004). Social stress can in turn lead to poor peer and interpersonal relations. Attempting to make friends can be difficult when a child or adolescent is self-conscious about his/her weight. Social acceptance by peers is detrimental to a child's psyche (McCullough, Muldoon, & Dempster, 2008). Peers could view overweight counterparts as unattractive or unintelligent (Davison & Birch, 2004). Experiencing rejection from peers because of their weight may cause obese children to feel more self-conscious and unhappy with their appearances (McCullough et al., 2008). This social stress can lead to other psychological problems such as depression (Puder & Munsch, 2010).

Due to the anxiety felt by an obese child, he/she may avoid being in social situations entirely which tends to limit his/her surroundings (Vila et al., 2004). Children and adolescents may only feel safe or comfortable at home where the only interactions around them are siblings and parents/guardians. Unfortunately, if parents are reacting



similarly, this can only strengthen the child's tendency to avoid social contact and have attachment issues associated with separation anxiety (Vila et al., 2004).

Children and adolescents who view themselves negatively because of their own images may view other aspects of their lives negatively as well thus making the stress of socializing more difficult (Braet et al., 1997). Baum and Forehand (1984) found that adolescents who are overweight give out and receive negative interactions with peers. Though behavior may play a role in this observation (Banis et al., 1988), it is also possible that the social stress associated with socializing produces anxious and negative reactions. Because they feel a sense of comfort only at home with a dependence on parents or guardians, they are more inclined to develop poor social competence which may then lead to poor interactions with peers (Vila et al., 2004). As a result, obese children and adolescents may play alone, may have one friend, may be generally liked by other children yet is picked on and bullied by others, and may socialize better with adults than with children (Pitrou et al., 2010).

Somatic symptoms may also be associated with social stress such as headaches, chest pain, stomach pain, and dizziness which could also manifest into depression and suicidal ideation (Choi et al., 2006). In obese children and adolescents, social stress and anxiety can lead to increased eating and the cycle continues to become worse. Prevention and intervention methods will be discussed in detail later; however, utilizing coping strategies can be helpful when somatic and psychological symptoms of social stress begin to occur (Valiente, Lemery-Chalfant, & Swanson, 2009). Understanding how to cope in social situations despite physical appearance can be a useful tool.

**Interpersonal Relationships.** Positive peer relationships are important to mental

health and wellbeing. Having interpersonal relationship satisfaction allows an individual to understand others, have empathy, develop a positive self-esteem, create confidence, and exhibit a positive attitude towards learning (Mowat, 2010). Interpersonal relations can be described as how an individual connects to others (Reynolds & Kamphaus, 2004). It is the meaningful affiliation between an individual and others which can lead to internal satisfaction, additional positive bonds with others, and positive external experiences (Montague et al., 2010; Mowat, 2010; Wade et al., 2011). In other words, an interpersonal relationship is any positive or negative meaningful relationship between the participant and others that results in significant emotions and experiences.

A negative interpersonal relationship can lead to social issues such as bullying. Obese children are often teased, bullied, stigmatized, and/or rejected because of their weight (Boneberger et al., 2009; Gray et al., 2009; Jansen et al., 2007; McCullough et al., 2009) causing interactions with others to be harmful or risky. Children who are bullied may become passive and/or suicidal or become aggressive and become the bullies themselves.

Bullying is one of the main forms of negative interpersonal relations. It has been defined as an “imbalance of strength or an asymmetrical power relationship” (Olweus, 2003, p. 12). The victim is most likely passive and allows the bully to continue hurting him/her. Bullying has taken many forms of aggression such as verbal, physical, and relational (Crick & Grotpeter, 1995; Slonje & Smith, 2008). Verbal aggression is a direct form of aggression where the aggressor may curse, tease, taunt, or threaten the intended target (Berkowitz, 1993; Slonje & Smith, 2008). Physical aggression may be defined as a direct form of aggression through hitting, pushing, and threatening to harm another

through bodily force (Berkowitz, 1993; Crick & Grotpeter, 1995). Finally, relational aggression is the use of relationships to purposefully hurt, control, or damage another child's friendships through rumor spreading, withdrawing, manipulation, and exclusion (Crick & Grotpeter, 1995; Young, Boye, & Nelson, 2006). The latest form of bullying is cyberbullying in which aggressors use technology such as social websites, cellular phones, and the internet in order to bully victims (Slonje & Smith, 2008). Cyberbullying can be harmful in many ways because catching the aggressor can be more difficult than other forms of aggression. In addition, the cyberbully can reach larger groups of peers at all times as long as technology is available (Slonje & Smith, 2008). Bystander involvement is also more difficult to attain because of the fear that the bully will somehow begin to harm the bystander (Slonje & Smith, 2008). Often, the aggressor could be a victim who hides behind a technological device in order to cause destruction. Using social networks or text messaging through an unknown number, the bully now can access the victim at any point in time and can manipulate both the victim and his/her friends. The bully may use social networks to spread rumors and tease the victim. All these forms of bullying impact interpersonal relations negatively in some form and can have substantial damage on obese children. Crick and Grotpeter (1995) suggest that relational aggression in particular can harm peer relationships because it is used to purposefully hurt and damage others through manipulating these relationships. In a study by Janssen, Craig, Boyce, and Pickett (2004) overweight and obese girls and boys were both more likely to be aggressors and victims of verbal, physical, and relational bullying than their average weight counterparts.

These negative interpersonal relations can be especially problematic for children who are obese. These children may already be suffering from low self-esteem and social stress. Involving aggressive behavior or poor peer relationships can only increase these problems. Children often notice physical differences before friendships are formed. Richardson, Goodman, Hastorf, and Dornbusch (1961) asked children to rank how much they liked a child based on a picture. The pictures included an obese child, an average weight child, and children with physical disabilities. Significant differences were found as the average weight child was ranked the highest and the obese child was consistently ranked the lowest. Obese children may have difficulty making friends because of their weight as they appear to be less advantageous friends (Pyle et al., 2006). Pitrou et al. (2009) found that obese children as young as age six are automatically stigmatized making positive relationships difficult to obtain. They also may have trouble keeping friends if they suffer from low self-esteem or high anxiety. Boneberger et al. (2009) found that overweight or obese children have a higher likelihood of peer relationship problems which can result in additional emotional problems as well.

### **Academic Impact**

Academic performance can be described as attaining knowledge and skill at different levels by evaluating performance through assessments or observations (Sadler, 2010). Academic performance has been found to have an impact on a child's psychosocial wellbeing (Datar & Sturm, 2006; Gable, Krull, & Chang, 2009; Judge & Jahns, 2007; Taras & Potts-Datema, 2005; Wentzel & Wingfield, 1998). Behavior and social functioning can be affected by poor academic performance (Gable et al., 2009). Children and adolescents may feel as if they have to compensate for poor academic

performance by acting out negatively to distract their peers from noticing their scores. Some students may not be motivated to take on school work and new challenges in the classroom (Wentzel & Wingfield, 1998). Motivation for academic success could be influenced by interpersonal relationships at school as well as social stress (Wentzel & Wingfield, 1998). Childhood obesity may also be a predictor of academic performance especially when linked with poor interpersonal skills and social stress.

Though little research has linked childhood obesity to academic performance, many researchers agree that it must impact a child's school life (Ballard & Alessi, 2010; Datar & Strum, 2006; Gable et al., 2009; Hunt, 2008; Theodore et al., 2009; Wittberg et al., 2009; Wittberg et al., 2010;). Much of the research has relied on the physical health aspect of academic performance: if a child is physically fit then he/she will perform better in school and standardized tests (Wittberg et al., 2009; Wittberg et al., 2010). Judge and Jahns (2007) found that being overweight caused difficulties in social settings and behavioral outcomes as well as poor test scores. However, when certain variables were removed, there were no differences. Gable et al. (2009) also found that being overweight caused problems with externalizing and internalizing behavioral and social development. Overweight girls in particular were found to have problems in social relationships as seen by teachers. Boys in this study were seen as aggressive and acted out. Implications for these children could be poor grades and results on assessments because they are concentrating on their behavioral and social issues.

Studies that specifically relate obesity to academic performance are limited (Datar & Sturm, 2006; Judge & Jahns, 2007; Taras & Potts-Datema, 2005). However, if a child is obese, he/she may have more health problems and have to be absent from school

because of sick days or doctors' appointments (Datar & Sturm, 2006; Taras & Potts-Datema, 2005). An obese child who is acting out in school because of emotional problems may be suspended from school. A child who is obese may be depressed, anxious, lonely, bullied, and/or has low self-esteem may not want to come to school or has trouble concentrating on his/her school work and receive poor grades (Datar & Sturm, 2006). In one study, overweight girls were found to have limited self-control and were more likely to act out in school through violent behaviors as well as demonstrate behaviors such as loneliness (Judge & Jahns, 2007). The way a child responds to the stress of self-esteem, anxiety, and relationships can influence success academically (Valiente, Lemery-Chalfant, & Swanson, 2008). If the child responds positively and learns how to cope with these issues, he/she may be more inclined to come to school and concentrate on school work rather than personal and social issues. In turn, academic performance may also have positive outcomes despite weight status.

### **Role of the School Counselor**

School counselors can be key components when helping students who are obese with issues such as self-esteem, anxiety, social stress, interpersonal relationships, and academic performance. The current study can help school counselors predict which factors may contribute to children who have low self-esteem, stress-causing behaviors, and poor academic achievement. This can lead to early prevention and intervention which can then allow school counselors to help individuals with childhood obesity gain confidence and become assertive.

School-based prevention and intervention programs have been found to be effective in schools because of the length of time students spend in school (Hollar et al.,

2010; Pyle et al., 2006). However, they are usually focused on exercise and eating nutritiously. Little research has indicated that there is an emotional piece that needs to be targeted in order to fully facilitate positive behavior and academic wellbeing for the child. If an obese child is suffering from low self-esteem, anxiety, and depression, motivating him/her to participate in long term exercise and eat nutritiously may not be effective. Therefore utilizing a helping professional within the school can be highly advantageous in understanding what underlying problems are occurring.

Interventions and prevention methods have essentially revolved around healthier eating habits of not only children and adolescents, but parents as well including breast feeding (Birch & Ventura, 2009; Costley & Leggett, 2010). Policymakers have made efforts to make changes to schools such as implementing healthier lunch menus (Dodson et al., 2009). Many researchers also recommend exercise in the classroom as well as during physical education (Brown et al., 2006; Levy & Petty, 2008; Li & Hooker, 2010; Wittberg et al., 2009; Wittberg et al., 2010), yet these methods are not often used by counselors especially when the child is emotionally unhealthy. Pyle et al. (2006) suggests that

counseling may provide social support for achieving goals, teach coping strategies to use when treatment program is delayed, consider risk of body-image dissatisfaction, and monitor for eating disorders and disordered behavior such as binge eating (p. 367).

School counselors are responsible for enhancing a child's personal/social, career, and academic development (American School Counselor Association [ASCA], 2005; Ballard & Alessi, 2006; Larrier, Bakerson, Linton, & Walker, 2011). When an obese

child is suffering from emotional and academic problems, these aspects of a child's development falter as well. Therefore, it is imperative that a school counselor intervene as soon as possible. The ASCA's (2005) national model serves as a framework for data driven school counseling programs. The program focuses on building a foundation, planning and developing a delivery system, managing the program, and showing accountability (ASCA, 2005). School counselors can base their prevention programs on several elements including raising self-esteem, decreasing anxiety, promoting positive peer support and interpersonal relations, coping mechanisms when dealing with stress, bully prevention, and study skills. The program rallies support from the school as well as the community and parents/guardians. It is also useful because it can reach the entire school through individual counseling, group work, and classroom guidance. Sessions can be highly effective and powerful when acceptable methods are used. School counselors are able to assist children suffering from childhood obesity to achieve goals successfully (Larrier et al., 2011) and may eventually help them be motivated to become physically healthier. Other school officials such as the physical education teacher or the school nutritionist can collaborate with the school counselor in order to help a children from comprehensive approaches.

School counselors can offer support services to children and adolescents who are obese. Understanding underlying problems such as low self-esteem, anxiety, social stress, poor interpersonal relationships, and poor academic performance which may result from obesity can be beneficial to school counselors. Personal, social, and academic changes may be seen if the school counselor can intervene early with effective prevention methods. Just as these problems began as a chain reaction, a positive change in one



aspect can be an impetus for other positive results in a child's or adolescent's life. Effective prevention methods by school counselors should begin early and should include program planning and development which involves the participants (Brown et al., 2006). Identifying children who may be participants is important because some students who are having problems with their personal, social, and academic growth may not be referred to the school counselor (Van Vlierberghe et al., 2009). Students who are obese can go unnoticed and may be internalizing their problems. School counselors should be able to recognize these children and use prevention and intervention methods early in order to facilitate their mental wellbeing.

Therefore, the purpose of the current research is to investigate whether childhood body mass index predicts self-esteem levels, anxiety levels, social stress levels, interpersonal relationship satisfaction, and academic performance. Studying the predictive factor of childhood obesity will expand the scientific knowledge base and will lead to more effective counseling practices in schools. The methodology proposed to address this overall purpose and the related research question is presented in the subsequent chapter.

## CHAPTER III

### METHODOLOGY

The current chapter is designed to provide the reader with an overview of the methodology that was used in order to effectively address the proposed research question. As such, this chapter will provide information related to the participants, materials, procedures, research design, variables, and data analysis procedures.

#### **Research Design**

The present research study uses a causal comparative research design to determine the levels of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance among students in Grades 5, 6, and 7 between two groups: (a) obese children and (b) non-obese children. In this particular type of research design, independent variables are not directly manipulated, thus allowing the researcher to observe the possible influences of these variables on present thoughts and behaviors (Leedy & Ormrod, 2001). The independent variable measured was childhood weight (obese versus non-obese), while the dependent variables measured included scores related to self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance.

## **Participants**

Participants in the current study included students in grades five, six, and seven in four public schools in northeast Mississippi. Of the possible total of 1460 students, 187 students returned parent consent and student assent forms. However, nine participants were removed from the study due to absences during data collection. Therefore, the current study included 178 participants. Of the 178 participants, 62% were female and 38% were male. Fifty-seven percent (57%) of the participants were African-American, 39% were Caucasian, 2% were biracial, 1% was Asian, and 1% was Hispanic.

Students in Grades 5 through 7 in four public schools in three cities in northeast Mississippi were recruited. Specifically, students who attend the public schools of Central School (fifth – sixth grades), Fifth Street Junior High School (sevent grade), East Webster Elementary School (fifth – sixth grades), and Armstrong Middle School (sixth – seventh grades) were recruited.

## **Institutions**

This study occurred at several public schools in the northeast area of Mississippi. Participating public schools that participated were Central School and Fifth Street Junior High in West Point, Mississippi and Henderson Elementary and Armstrong Middle School in Starkville, Mississippi.

### **Central School**

Central School currently serves 258 students in Grade 5 and 228 students in Grade 6. Approximately 53% male students and 47% female students attend Central School. The student population in Grade 5 during the 2011-2012 school year is made up

of 84% African-American, 16% Caucasian, and 0.04% Hispanic. The students population in Grade 6 consists of 85% African-American, 14% Caucasian, .4% Hispanic, and .4% Asian. Of these students, approximately 85% receive free and reduced lunch. Academic performance based on the MCT2 and Central School is considered Low Performing by the Mississippi Department of Education from the 2011 school year.

### **Fifth Street Junior High School**

Fifth Street Junior High School houses students in Grades 7 and 8. It currently serves 269 students in Grade 7. Approximately 53% of these students are male and 47% of these students are female. The student population during the 2011-2012 school year is 81% African-American, 18% Caucasian, 1% Hispanic, and 0.3% Asian. Of these students, approximately 85% receive free and reduced lunch. Academic performance based on standardized tests. Currently, Fifth Street is considered to be on Academic Watch by the Mississippi Department of Education based on the 2011 MCT2 performance.

### **Armstrong Middle School**

Armstrong Middle School serves 289 students in Grade 6 and 279 students in Grade 7 in the 2011-2012 school year. Of these students, 53% are male and 47% are female in the grade 6 and 50% are male and 50% are female in Grade 7. In Grade 6, 33% of the students are Caucasian, 64% are African American, and 3% are Asian. In Grade 7, 30% are Caucasian, 66% are African American, 2% are Asian, and 2% are Hispanic. Based on the 2011 MCT2 performance, Armstrong Middle School is considered Successful according to the Mississippi Department of Education.

## **East Webster Elementary School**

East Webster Elementary School houses Grades Kindergarten through sixth. There are 70 students in grade 5 of whom 53% are male and 47% are female. Of these students 99% are Caucasian and 1% are African American. There are 67 students in Grade 6 of whom 46% are male, 54% are female. In Grade 6, 79% are Caucasian, 19% are African American, and 1% are Hispanic. East Webster Elementary was considered a High Performing school during the 2011-2012 school year and has been a High Performing school since 2004.

## **Materials**

Materials for this study included a demographic survey (see Appendix F), the Behavior Assessment System for Children (Second Edition), BMI Collection form (see Appendix E), and the MCT2.

## **Demographic Survey**

The demographic survey asked questions related to the participants' gender, age, and ethnicity (see Appendix F).

## **BASC-2**

The BASC-2 by Reynolds and Kamphaus (2004) is a multi-method, multidimensional system used to evaluate the behavior and self-perceptions of children and young adults aged 2-25 years. The BASC-2 (Reynolds & Kamphaus, 2004) measures behavior and personality including positive/adaptive dimensions as well as negative/clinical dimensions.

The norms of the BASC-2 (Reynolds & Kamphaus, 2004) are based on a representative sample of the general population of male and female children in each age range in the northeast, north central, south and west portions of the United States. The race/ethnicity of the population was said to reflect the U.S. population during 2001. Race/ethnicity included African-Americans, Hispanics, whites, and others. Validity for the BASC-2 (Reynolds & Kamphaus, 2004) is based on correlational studies between the assessment itself and several other measures with good validity. Concurrent validity correlating the Self-Report of Personality (SRP) to the Achenbach System of Empirically Based Assessment Youth Self-Report and Conners-Wells' Adolescent Self-Report is moderate to strong (Mental Measurements Yearbook, 17).

The BASC-2 (Reynolds & Kamphaus, 2004) has several rating scales, however this study will use the Self-Report of Personality – child (SRP-C) which can assess ages 8-11 and the Self-Report of Personality – adolescent (SRP-A), which assesses individuals ages 12-21. The items on both consist of true/false responses as well as four point rating scales ranging from Never to Almost Always about how the individual feels (Reynolds & Kamphaus, 2004). The SRP-C consists of 139 items, while the SRP-A consists of 176 items (Reynolds & Kamphaus, 2004). Both can be interpreted by transforming raw scores to T-scores (Reynolds & Kamphaus, 2004).

The general norm sample for the SRP-C consisted of 1500 children (750 males and 750 males, ages 8-11), while the general norm sample for the SRP-A consisted of 900 adolescents (450 males and 450 females, ages 12-14). Students classified or diagnosed with emotional, behavioral, or physical problems with the most common disorders being attention deficit/hyperactivity disorder, emotional/behavioral disturbance,

mental retardation or developmental delay, pervasive developmental disorders, specific learning disability, and speech/language impairment were included. The composite scales from the SRP measure emotional symptoms, inattention/hyperactivity, internalizing problems, personal adjustment, and school problems (Reynolds & Kamphaus, 2004). The primary scales measure a wide range of clinical issues including alcohol abuse, anxiety, attention problems and depression (Reynolds & Kamphaus, 2004). Finally, adaptive scales on the SRP assess interpersonal relations, relations with parents, self-esteem, and self-reliance (Reynolds & Kamphaus, 2004). Internal consistency for the general norm sample for individual scales is high with a median value near 0.80 (Reynolds & Kamphaus, 2004). Composite score reliabilities range from the middle 0.80s to the upper 0.90s (Reynolds & Kamphaus, 2004).

The combined internal reliability for the individual scales for this study based on the general norms for the SRP-C are 0.81 on the social stress scale, 0.86 on the anxiety scale, 0.81 on the interpersonal relations scale, and 0.77 on the self-esteem scale (Reynolds & Kamphaus, 2004). Combined internal reliability for the SRP-A individual scales are 0.85 on the social stress scale, 0.86 on the anxiety scale, 0.79 on the interpersonal relations scale, and 0.83 on the self-esteem scale (Reynolds & Kamphaus, 2004). For the purpose of this study, the primary scales that were assessed included self-esteem, anxiety, social stress, and interpersonal relations.

**Self-Esteem Scale.** The self-esteem scale of the BASC-2 (Reynolds & Kamphaus, 2004) assesses a child's and adolescent's feelings of self-satisfaction for both physical and overall characteristics. If a child or adolescent has high scores on the self-esteem scale, he/she is considered to have higher self-esteem levels making him or her

appear warm, open, venturesome, and self-assured (Reynolds & Kamphaus, 2004). He or she are more likely to have positive peer relations and a good sense of identity and ego strength (Reynolds & Kamphaus, 2004). Those participants with self-esteem scores in the clinically significant range tend to be associated with lower self-esteem, shyness, a sense of dissatisfaction, anxiety, and depression (Reynolds & Kamphaus, 2004).

**Anxiety Scale.** The anxiety scale assesses generalized fears, nervousness, and worries that are irrational and undefined in the mind of the individual (Reynolds & Kamphaus, 2004). Participants with high scores on this scale may feel dread as well as have bothersome, obsessive thoughts. Children who have clinically significant high scores may experience confusion when making decisions and be sensitive to criticism. At-Risk Anxiety Scale scores may indicate chronic or acute stress which can denote feelings of being overwhelmed and overburdened by minor problems (Reynolds & Kamphaus, 2004).

**Social Stress Scale.** The social stress scale of the BASC-2 (Reynolds & Kamphaus, 2004) assesses the level of stress experienced by children and adolescents when interacting with peers and others. Individuals who suffer from social stress, demonstrated by high scores, may have chronic feelings of tension and pressure as well as inability to find coping resources such as friends and family. Clinically significant scores may indicate that the child cannot cope with peer relationships, may feel guilty, and experience unexplained hyperirritability and edginess. At-Risk scores denote problems of anxiety, confusion, and somatic complaints.

**Interpersonal Relations Scale.** The interpersonal relations scale assesses the



ability to successfully relate to others and the degree of enjoyment that comes from this interaction. Participants who have lower scores that fall into the clinically significant range may have problems relating to peers as well as adults. At-Risk scores may signify problems relating to others and social skills.

### **BMI Data Collection Form**

BMI is determined by weight in kilograms divided by height in meters squared (Balistreri & Hook, 2009; Hergenroeder, Wert, Hile, Studenski, Brach, 2011). According to the World Health Organization (2013), individuals who are overweight have BMIs between 25.0 and 29.9 and those who are obese have BMIs of 30 or higher. The CDC (2011c) established a BMI range for overweight children to be between the 85<sup>th</sup> and 94<sup>th</sup> percentile for the child's age and sex, and obese if the child is above the 95<sup>th</sup> percentile for the child's age and sex (Arterburn et al., 2010). However, it is important to remember that there are some limitations to BMI calculations. BMI may underestimate or overestimate body fat for individuals who have lost muscle mass or gained muscle mass respectively (Hergernroeder et al., 2011).

The researcher obtained a BMI Data Collection Form from the CDC website in order to maintain confidentiality of each participant's BMI scores (see Appendix E). The form was an Excel spreadsheet with the BMI calculation already defined. The spreadsheet included a place for the code, child's name, sex, birth date, date of measurement, height (feet and inches), weight (pounds), BMI, and BMI percentile. The BMI and BMI percentile were calculated after all the information was entered.

## **MCT2**

The Mississippi Department of Education (2011) describes the MCT2 as a standardized criterion-referenced test that assesses grades three-eight in the areas of Language Arts and Math. This includes students with individualized education plans (IEP). The MCT2 is in compliance with the No Child Left Behind Act (2001) and is in accordance with the 2006 Mississippi Language Arts Frameworks Revised (Mississippi Department of Education, 2011) and the 2007 Mississippi Math Frameworks Revised (Mississippi Department of Education, 2011). Results of the MCT2 are used to measure growth, achievement, and academic yearly progress in the Mississippi Statewide Accountability System (Mississippi Department of Education, 2011). The MCT2 Technical Manual (2008) did not report exact scores for validity, but reported it as being effective. In the MCT2 Technical Manual Update (2010), Cronbach's alpha for Language Arts for Grade 5 was 0.91, for Grade 6 was 0.89, and for Grade 7 was 0.87. Cronbach's alpha for Math for Grade 5 was 0.90, for Grade 6 was 0.91, and for Grade 7 was 0.90.

The MCT2 is administered over a three-day period with Language Arts being given on two days and Math given on the third day. Language Arts measures skills in vocabulary, reading, writing, and grammar. The Math section assesses numbers and operations, algebra, geometry, measurement, and data analysis and probability. The MCT2 is untimed and contains only multiple-choice questions.

### **Procedures**

Prior to collecting data, written permission was obtained from the Institutional Review Board (IRB) of Mississippi State University (see Appendix A). The researcher then visited classrooms in grades five, six, and seven in four public schools in northeast

Mississippi. During this visit, the researcher read an oral script (see Appendix D) that described the study and answered questions from students. A parental consent form (see Appendix B) was then sent home for parents/guardians to sign. Students who returned a signed informed consent form, whether parents provided consent or not, were eligible to participate in a drawing for a \$25 gift card. The researcher then provided student assent forms (see Appendix C) to students whose parents/guardians gave written approval for students to participate in the study. The researcher read the student minor assent and answered questions before students chose whether or not to sign the assent form.

Once parental consent and child assent was obtained, the researcher individually weighed and measured students' bodies to calculate BMI scores. These data were written on the BMI Data Collection Form and then entered into a database from the CDC website (see Appendix E) that automatically calculates BMI. During a second visit, the researcher gave participants the demographic form and the BASC-2 (Reynolds & Kamphaus, 2004) to complete. Finally, on a third visit to the schools, the researcher recorded participants' standardized test scores from the MCT2.

### **Data Analysis**

To answer the research question, is there a statistically significant difference between students who are obese as compared to students who are not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship, and academic performance, the researcher analyzed the data using the multivariate analysis of variance (MANOVA) statistical procedure. Assumptions were examined for normality, homogeneity, and homoscedasticity for all five dependent variables. The level of

significance was 0.05. Demographic variables were also summarized to provide a clearer description of participants.

## CHAPTER IV

### RESULTS

A MANOVA was used to determine the levels of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance among students in grades in five, six, and seven between two groups: (a) obese children and (b) non-obese children. The following chapter will present a description of the results of the MANOVA performed. The current study included the following research question:

Is there a statistically significant difference between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship, and academic performance?

#### **Analysis of the Data**

##### **Demographic Characteristics**

The original sample size consisted of 187 participants. Due to absences during data collection, nine participants were eliminated from the data set.

A total of 178 students participated in the study. Of the 178 participants, 62% were female and 38% were male. Fifty-seven percent (57%) of the participants were African-American, 39% were Caucasian, 2% were biracial, 1% was Asian, and 1% was Hispanic.

Approximately 55% of participants were considered non-obese, while approximately 43% were considered obese. Demographic data is presented in Table 1.

Table 1

*Demographic characteristics of students who participated in current study (n=178).*

Characteristics	<i>n</i>	Percentage
Female	110	62
Male	68	38
<hr/>		
Caucasian		
Males	28	16
Females	42	24
African-American		
Males	38	21
Females	63	35
Hispanic		
Males	1	.01
Females	0	
Asian		
Males	0	
Females	2	.01
Biracial		
Males	1	.01
Females	3	.02
<hr/>		
African-American	101	57
Caucasian	70	39
Biracial	4	2
Asian	2	1
Hispanic	1	1
<hr/>		
Non-Obese	98	55
Obese	80	45
<hr/>		
Non-Obese Males	38	21
Non-Obese Females	60	34
Obese Males	29	16
Obese Females	51	29

### **Mahalanobis Distance and Assumptions of MANOVA**

Before proceeding with the data analysis, the researcher checked for outliers and assumptions of the MANOVA to ensure there were no violations. Two cases were

removed as outliers after conducting the Mahalanobis distance test. A second Mahalanobis distance test was conducted and three more outliers were removed. Once the outliers were removed, assumption checks could be performed.

Assumptions of the MANOVA include using a random sample that is independent of each other, multivariate normality, equal variances or homoscedasticity, and linearity of the dependent variables. Independence among the sample was not violated as the participants were random. Normality histograms of the dependent variables self-esteem, anxiety, social stress, interpersonal relations, language MCT2 scores, and math MCT2 scores were created to examine multivariate normality (see Figures 1-6). Self-esteem and interpersonal relationship scores were negatively skewed, but all other plots were in normal range or close to normal range. According to Tabachnick & Fidell (2007), a MANOVA can withstand violations to normality when it is caused by skewness and not outliers. Because outliers were removed prior to the analysis, skewness is to blame for the violation.

Bivariate scatterplots for the dependent variables were created for the assumptions of homoscedasticity and linearity. To show linearity, the shape of the scatterplot should be elliptical. Several of the dependent variables appear elliptical. Figure 7 illustrates linearity among the variables.

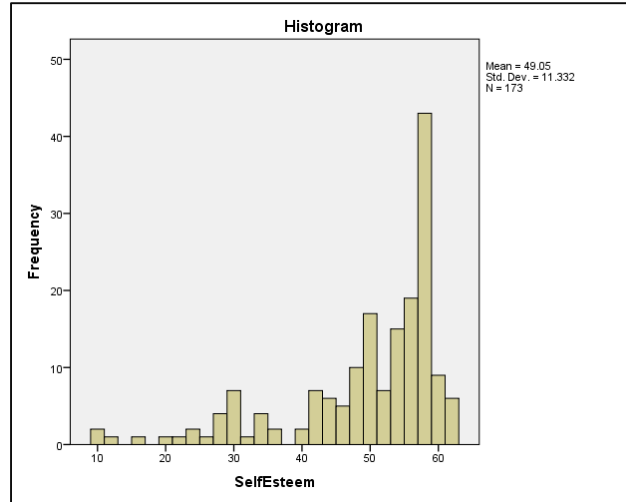


Figure 1. Histogram displaying normality for the dependent variable self-esteem. A negative skew can be seen.

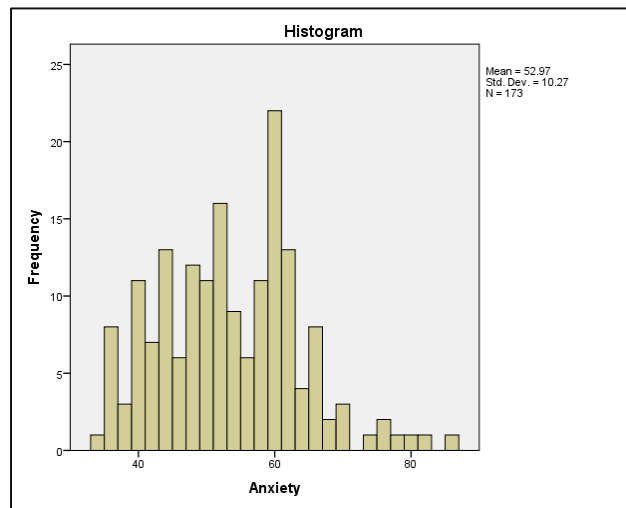


Figure 2. Histogram displaying normality for the dependent variable anxiety.



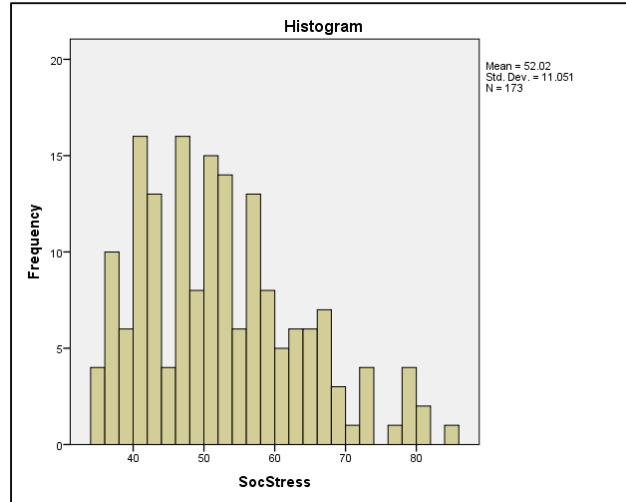


Figure 3. Histogram displaying normality for the dependent variable social stress.

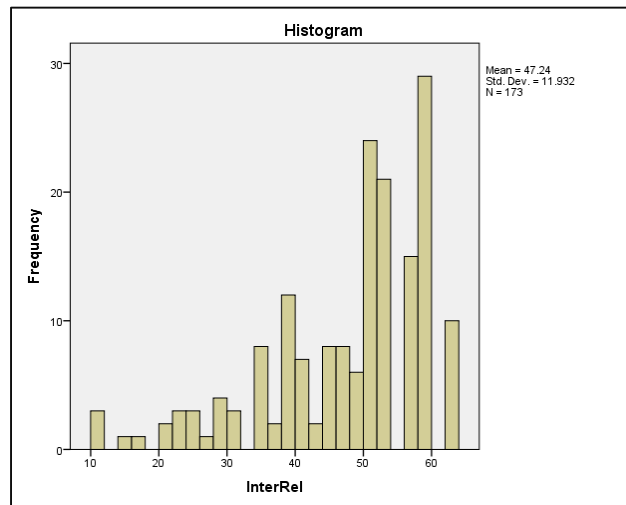


Figure 4. Histogram of normality for the dependent variable interpersonal relationships. A negative skew can be seen.

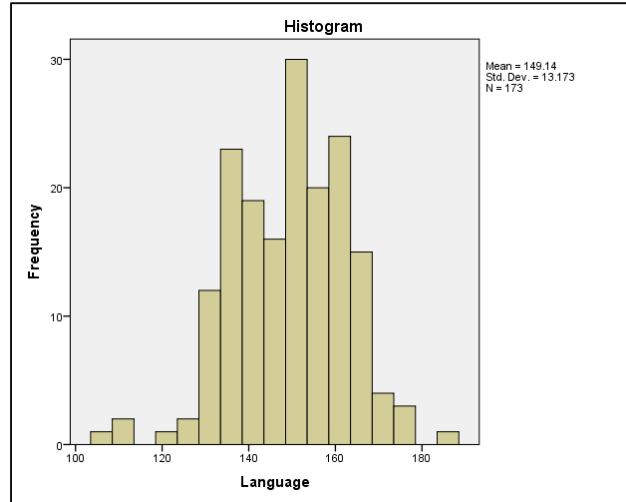


Figure 5. Histogram of normality for the dependent variable language.

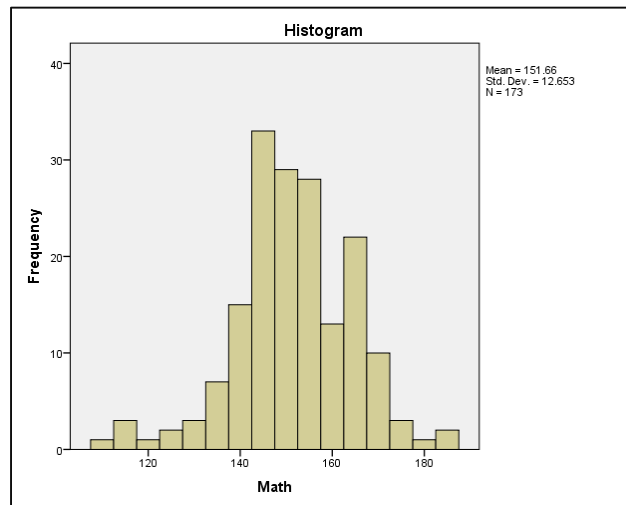


Figure 6. Histogram of normality for the dependent variable math.

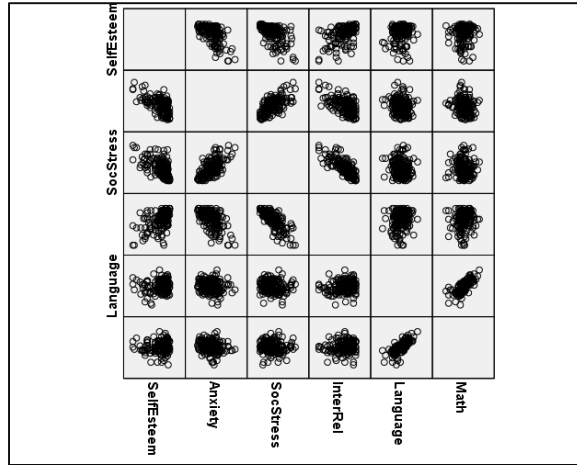


Figure 7. Bivariate scatterplot depicting linearity of the dependent variables from the BASC-2 (self-esteem, anxiety, social stress, interpersonal relationships) and MCT2 (language and math).

Box's M test indicate that the assumption of homoscedasticity was not violated with a non-significant M,  $p=0.02$  (see Table 2).

Table 2

*Box's Test of Equality of Covariance Matrices*

Box's M	37.812
F	1.732
df1	21
df2	95242.734
Sig	0.02

The researcher conducted log and log 10 transformations. Neither transformation eliminated skewness, therefore data analysis proceeded without the transformations.

## Research Question

Is there a statistically significant difference between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship, and academic performance?

A MANOVA procedure was conducted to determine if there was a statistically significant difference between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship satisfaction, and academic performance. After outliers were eliminated and assumptions were checked, the MANOVA was performed.

After reviewing the results, the researcher concluded that measures of self-esteem, social stress, anxiety, interpersonal relationship satisfaction, and academic performance were not significantly different between obese and non-obese participants Pillai's Trace=.037,  $F(6,166)=1.065$ ,  $p>.05$ , multivariate  $\eta^2=.037$ . The proportion of variance in the dependent variables explained by BMI is about 4%.

Although there was no statistical differences among the main effects of the model, differences in group means were noted between the two groups. Self-esteem levels ( $M=49.05$ ,  $SD=11.33$ ), interpersonal relationship satisfaction ( $M=47.24$ ,  $SD=11.93$ ), language test scores ( $M=149.14$ ,  $SD=13.17$ ), and math test scores ( $M=151.66$ ,  $SD=12.65$ ) were all higher for non-obese participants than obese participants. Anxiety levels ( $M=52.97$ ,  $SD=10.27$ ) and social stress levels ( $M=52.02$ ,  $SD=11.05$ ) were higher for obese participants than for non-obese participants. Table 3 presents the group statistics below.

Table 3

*Means and Standard Deviations for Obese and Non-Obese Participants for Each Dependent Variable.*

	Obese	SD	Non-obese	SD
Self-esteem	47.11	13.22	50.57	9.40
Anxiety	54.29	10.95	51.93	9.63
Social Stress	53.67	11.81	50.72	10.30
Interpersonal Relationships	45.17	12.64	48.87	11.15
Language	147.50	12.06	150.42	13.91
Math	150.43	12.58	152.62	12.69

Although statistically significant differences were not found for the above variables, differences in levels of self-esteem,  $F(1,171)=4.047, p<.05, \eta^2=.023$ , and interpersonal relationship satisfaction,  $F(1, 171)=4.161, p<.05, \eta^2= .024$ , were statistically significant between the two groups. The MANOVA showed no statistical significance on the main effects between the independent variables (obese and non-obese) the test of between-subject effects revealed that the BMI category affects levels of self-esteem and interpersonal relationship satisfaction, but not levels of anxiety, social stress, or academic performance. No post hoc tests were performed as the MANOVA showed there was no statistical significance between the independent variables.

### Summary of Procedures

The data presented in this chapter were obtained by using the Statistical Package for Social Sciences, Version 20.0 (SPSS 20.0). The data analyses that were utilized include descriptive and MANOVA.

Descriptive statistics were utilized to determine demographic characteristics of the sample, including age, gender, and ethnicity. MANOVA was conducted to evaluate the differences between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship satisfaction, and academic performance.

## CHAPTER V

### DISCUSSION, LIMITATIONS, AND FUTURE RESEARCH

This chapter contains a discussion the results of the MANOVA conducted by the researcher. The study examined differences between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship satisfaction, and academic performance. The BASC-2 (Reynolds & Kamphaus, 2004) and scores from the MCT2 were used during data collection along with each child's BMI. This chapter includes a summary of the study, limitations, and implications for practice and future research.

#### **Summary**

##### **The Problem**

Obesity in the United States and the rest of the world has been in the media spotlight (Boneberger et al., 2009; Cecil et al, 2005; Olds et al, 2010; Sen et al, 2010). Childhood obesity is a growing problem due to the health risks associated with being overweight or obese as a child. Mississippi's obesity rate is at 30% with 17% of children in the state being obese, the highest in the nation (CDC, 2011c).

Obesity research in children has focused primarily on the physical health of the child whereas mental wellbeing has not been examined in great detail (Boneberger et al., 2009; Costley & Leggett, 2010; Daniels, 2006; Goran et al., 2003; Olds et al., 2010; Sen

et al., 2008; Theodore et al., 2009). Though physicians, nutritionists, and physical education teachers are important parts of a child's wellbeing, they do not necessarily focus on the child's mental health. However, obese children may face struggles with depression, self-esteem, quality of life, anxiety, aggression, poor peer relations, and eating disorders (Boneberger et al., 2009; Burrows & Cooper, 2006; Daniels, 2006; Datar & Sturm, 2006; Goodman & Whitaker, 2002; Gray et al., 2009; Perreira & Ornelas, 2011; Puhl & Latner, 2007; Pyle et al., 2006; Riggs et al., 2007; Theodore et al., 2009; Walker & Hill, 2009).

This study examined levels of self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance among students in grades 5-7. Identifying these specific issues in children and helping them with their personal, social, and academic growth can be critical in preventative measures. School counselors, therapists, and school psychologists are the most qualified professionals to handle these issues.

The purpose of this study was to determine if there was a statistically significant difference between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship satisfaction, and academic performance among children in grades five through seven in several public schools in Mississippi.

## **Procedures**

The researcher used a causal comparative research design to answer the following research question:



**Research Question 1:** Is there a statistically significant difference between students who are classified as obese as compared to students who are classified as not obese with respect to levels of self-esteem, social stress, anxiety, interpersonal relationship, and academic performance?

The independent variable was childhood weight (obese or non-obese). Dependent variables were scores related to self-esteem, anxiety, social stress, interpersonal relationship satisfaction, language and math. Levels of self-esteem, anxiety, social stress, and interpersonal relationship satisfaction were measured by the BASC-2 (Reynolds & Kamphaus, 2004). Math and language scores were measured by the MCT2.

Included in the study were 178 participants from Grades 5, 6, and 7 from four public schools in northeast Mississippi. The researcher weighed students, administered a demographic survey and the BASC-2 (Reynolds & Kamphaus, 2004), and obtained MCT2 scores from school counselors in the schools.

**Research Results.** BASC-2 (Reynolds & Kamphaus, 2004) and MCT2 scores were obtained and entered into SPSS 20.0 and a MANOVA was conducted. Though there was no statistically significant difference found between the categories obese and non-obese, there were differences between groups in self-esteem and interpersonal relationship satisfaction.

### **Limitations**

There were limitations of this study. Students' responses to the BASC-2 (Reynolds & Kamphaus, 2004) may not have been completely accurate because they did not understand statements or they were worried about what the researcher thought of their

answers. Some students took the BASC-2 (Reynolds & Kamphaus, 2004) in the afternoon when they may have been fatigued. If they had a disagreement with teachers, parents, or classmates prior to taking the assessment, for example, their answers may have been inaccurate.

The analysis itself had issues with the assumption of normality being violated for two of the dependent variables. Transformations were performed but did not help the skewness. The two groups had unequal sample sizes. There were 20 more participants in the non-obese group than in the obese group. MANOVA allows for groups to be unequal, but having equal groups might have allowed the assumption of normality to be met. Transformations were performed but did not eliminate the skewness of the data.

Because the sample was taken from only a small area of Mississippi, it can only be generalized to the counties in which the study was conducted. These were not the most obese counties in Mississippi, though many of the original sample was considered obese. Several of the participants were excluded from the study because of absences.

The current study used the MCT2 scores to determine academic performance. This may have not given a clear picture about how a student performs on tests in the classroom. The MCT2 is a standardized, high stakes test. During the MCT2, an administrator and a proctor are present. The MCT2 scores may not give a clear depiction on how students perform in a regular classroom setting.

## **Discussion**

Previous research has found that childhood obesity impacts a student's emotional health including poor self-esteem, poor peer relations, anxiety, aggression, body image issues, and depression (Bonberger et al., 2009; Burrows & Cooper, 2006; Daniels, 2006;

Datar & Sturm, 2006; Goodman & Whitaker, 2002; Gray et al., 2009; Perreira & Ornelas, 2011; Puhl & Latner, 2007; Pyle et al., 2006; Rayner, 2005; Riggs et al., 2007; Theodore et al., 2009). A school counselor can aid obese children who have these issues as school counselors directly address students' personal, social, and academic concerns. In the current study the particular variables addressed were self-esteem, anxiety, social stress, interpersonal relationship satisfaction, and academic performance. Though the research notes that childhood obesity impacts these individual emotional issues, the current study found that when combined, there are no statistically significant differences between students who are obese and those who are not. However, when viewed individually, self-esteem and interpersonal relationships were statistically significant. Though the main effect was not statistically significant, the means between obese children and non-obese children did show patterns that reflected current literature. Students who were classified as obese had lower scores for self-esteem, interpersonal relationships, and math and language scores and higher anxiety and social stress scores than those students classified as non-obese.

### **Personal Impact**

**Self-Esteem.** Extensive research has studied the link between self-esteem and childhood obesity (Hesketh et al., 2004; Israel & Ivanova, 2002; Jansen et al., 2007; Must & Strauss, 1999; Wang et al., 2009). A decrease in self-esteem with anxiousness and behavior problems have been found in obese children (Sheslow et al., 1989). Research suggests that a higher BMI can cause low self-esteem (Hesketh et al., 2004). Children who are obese may get teased, bullied, and develop body image issues which can decrease self-esteem. Children who have low self-esteem can also have increased chances

of conduct problems, emotional instability, and higher likelihoods to engage in risky behaviors such as drug use, alcohol abuse, cigarette use, sexual behavior, and suicidal behavior (Barry et al., 2003; Braet et al., 1997; DePauw et al., 2009; Geckil & Dunder, 2011; Ha et al., 2008; Wild et al., 2004).

The current study agreed with the research. Students who were classified as obese had statistically significant scores though the main effect was not statistically significant. As noted in the research, girls tend to have lower self-esteem than boys (Burrow & Cooper, 2002; Israel & Ivanova, 2002; Wang et al., 2009). Asci et al. (2007) found that body image was a significant factor when examining self-esteem. Girls who had low self-esteem suffered from body dissatisfaction (Burrows & Cooper, 2002). In the current study, there were 60 obese females which was the majority of the participants. This could be a reason why self-esteem was statistically significant by itself.

Increasing self-esteem can lead to balance in other aspects of a child's life (Braet et al., 1997; Wild et al., 2004). As self-esteem increases, the child feels good about him/herself and is able to focus on maintaining this healthy balance. Personal, social, and academic growth may be positively influenced by developing a high self-esteem (Carranza, You, Chhuon, & Hudley, 2009; Scott & de Barona, 2011). Peer and familial relationships may become more positive and interactions with others may also be fulfilling as research suggests that parental obesity and self-esteem influence a child's weight and self-esteem (Epstein et al., 1994). Though much focus has been based on physical activity and appearance, self-esteem cannot be overlooked as an important part of a child's health.

**Anxiety.** Several studies concluded that anxiety disorders and weight were

associated with one another and can become comorbid with other psychological disorders including depression (Anderson et al., 2006; Epstein et al., 1994; Rofey et al., 2009). Children who are obese may avoid people, places, and situations (Jansen et al., 2007). The current study did not find any statistically significant differences between students classified as obese and those who were classified as non-obese. It is also important to note that though the mean differences were not significant, the obese participants did have higher anxiety than the non-obese students.

Because of this, a school counselor should still consider addressing this issue with a child who is obese. Individual and group counseling could be beneficial for obese children who have anxiety disorders. Cognitive behavioral therapy has been shown to have an impact with students who have anxiety disorders (Benjamin, Harrison, Settapani, Brodman, & Kendall, 2013; Chiu, Langer, McLeod, Har, Drahota, Galla, Joacobs, Ifekwunigwe, & Wood, 2013). Chiu et al. (2013) noted that schools are ideal places for school counselors to make impacts as they can reach larger numbers of students by using cognitive behavioral therapy. In particular, a program that utilizes several people in the child's life such as caregivers, teachers, school psychologists, and school nurses could be extremely effective to help the child as a whole (Chiu et al., 2013). In the study by Chiu et al. (2013), the researchers used CBT to teach skills such as thought awareness, positive self-talk, exposure and rewards.

### **Social Impact**

**Social Stress.** McCullough et al. (2008) found that children might feel more self-conscious and unhappy about their appearances because of peer rejection due to weight. Lack of socializing with peers may lead to difficulties with social competence especially

as one becomes an adult (Vila et al., 2004). The current study found that there was no statistically significant difference between participants classified as obese and those who were classified as non-obese. However, the means suggested that participants who were obese had higher social stress than their non-obese counterparts. Therefore, school counselors may want to consider that some students who are obese may have higher social stress and could benefit from counseling. Utilizing coping strategies can be helpful when somatic and psychological symptoms of social stress begin to occur (Valiente, Lemery-Chalfant, & Swanson, 2009). Understanding how to cope in social situations despite physical appearance can be a useful tool.

**Interpersonal Relationships.** Previous research has not focused on interpersonal relationship satisfaction and obesity. This is surprising as it relates to the issue of bullying which has become a very important topic especially in the 21<sup>st</sup> century. Children who are obese may be teased, stigmatized, and rejected because of their sizes (Boneberger et al., 2009; Gray et al., 2009; Jansen et al., 2007; McCullough et al., 2009). This can lead to suicidal or aggressive behaviors.

The current study will add to the literature and the impact of obesity on interpersonal relationships because there were significance differences found between students who are classified as obese and those who are classified as non-obese. Participants who were obese had lower interpersonal relationship scores than their non-obese counterparts revealing that they might have negative interpersonal relationships. They may be experiencing bullying and rejection from their peers. Conversely, students who were the victims of bullying may be bullies themselves now. School counselors must

utilize responsive services to help students who are bullied as well as those who are bullies in order to bring about positive interpersonal relationships.

### **Academic Impact**

**Academic Performance.** Little research has studied the impact of childhood obesity on academic performance. Most of the research focuses on physical health in conjunction with academic success (Wittberg et al., 2009; Wittberg et al., 2010). The previous literature notes that academic performance has an impact on a child's psychosocial wellbeing (Datar & Sturm, 2006; Gable et al., 2009; Judge & Jahns, 2007; Taras & Potts-Datema, 2005; Wentzel & Wingfiel, 1998). Judge and Jahns (2007) found that being overweight caused problems in social settings, behavioral outcomes, and poor test scores; however, when the variables socioeconomic status, maternal education, and ethnicity were controlled, these differences were not significant. The current study found no statistically significant differences in test scores between students classified as obese and students classified as non-obese. The language and math means from the MCT2 were lower for the obese students when compared to the non-obese students.

### **Implications for Practice**

Though there were no statistically significant differences between groups, the researcher found that the mean scores of dependent variables reflected differences between obese and non-obese groups. Levels of self-esteem, interpersonal relationship satisfaction, language, and math score means were all lower for the obese participants than their non-obese counterparts. Conversely, levels of anxiety and social stress were both higher for obese participants than non-obese participants.

The  $\eta^2$  found that the function accounted for only 4% of the variance by the independent variables obese and non-obese. The other 96% of the variance can be explained by other variables. These variables may include socioeconomic status, familial patterns in obesity, psychosocial issues, interaction of nutrition, involvement in sedentary activities versus physical activities, gender, and ethnicity. School counselors cannot change these variables within schools. However, they can provide services with increasing self-esteem, interpersonal relationship satisfaction, and decreasing anxiety and social stress. School counselors can also direct teachers to implement specific academic interventions to increase test scores.

The ASCA National Model provides the structure for a comprehensive school counseling program which includes responsive services (ASCA, 2005). Individual counseling, group counseling, and classroom guidance are the primary elements of these services that can aid students who are obese and suffering from low self-esteem and poor peer relationships (Ballard & Alessi, 2006).

### **Classroom Guidance**

Classroom guidance lessons can teach basic information about nutrition, healthy meal options, and goal setting as well as discussion about the difficulties of reaching these goals (Ballard & Alessi, 2006). Promoting healthy eating habits and being active have become national endeavors (Wang & Veugelers, 2008). Learning about healthy food at an early age is considered a prevention method (Birch & Ventura, 2009). Children should be given support rather than criticized, which lowers self-esteem and confidence (Flodmark, 2005).



## **Group Counseling**

School counselors can also use art therapy, journaling, and experiential methods to help children and adolescents work through feelings of anger, sadness, and loneliness. Group counseling sessions can be very powerful for students who have similar issues. Kalavainen, Korppi, and Nuutinen (2007) found that group work with children who are obese was actually more effective than individual counseling. Students who are getting teased for their weights can find comfort and safety in a group with others who are having the same problems. The school counselor can connect experiences with bullying or low self-esteem and the group can work together to solve the problem. Using techniques such as role play, journaling, and experiential methods, students work together to gain confidence. Additionally, Flodmark (2005) noted that when children and adolescents were harassed about their weight by family and classmates, they tended to have negative attitudes towards physical activity. Helping children and adolescents learn specific coping strategies during group counseling can greatly increase self-esteem and confidence when confronted with people who have negative attitudes.

School counselors can also utilize resources such as school nutritionists and school partners in local communities to help with programming about healthy choices, eating in moderation, and exercising, and to plan their daily meals. Children and adolescents who are interested in losing weight healthily can create food diaries and exercise goals. An interactive program would probably be more effective for children.

## **Parent Education**

Being able to influence the parents or guardians can help combat those other variables that school counselors are not able to directly influence or change. Parent

workshops are useful interventions to bring about awareness. Teaching parents about healthy habits can influence how a child eats. In areas of low SES, unhealthy foods are cheaper and more readily available. With this in mind, parents can learn about eating in moderation and choosing vegetables and fruits from the grocery. An interactive parent workshop with the school counselor might teach parents how to cook these meals. They may also show the difference between moderation and overeating. School counselors can once again ask community partners to help with programming and development of the workshops. The workshop is also a good opportunity for the school counselor to talk with parents about the emotional wellbeing of their children. In a study by Edwards et al. (2006), a family-based behavioral treatment was used as a family and lifestyle intervention for the children who were obese. Positive outcomes in self-esteem and reduced depressive symptoms were found. In other words, parent involvement appears to have a positive effect on obese children and adolescents who have low self-esteem.

### **Recommendations for Future Research**

Future research should continue to focus on the mental health implications of childhood obesity. Though some research touches on it, studies need to go more in depth with variables that are connected with childhood obesity. Other combinations of variables in the BASC-2 (Reynolds & Kamphaus, 2004) could be considered. The teacher and parent versions of the BASC-2 (Reynolds & Kamphaus, 2004) could also be utilized. Other behavior assessments should be used as well in order to gain an understanding of the child as a whole.

Future research could also go beyond the northeast portion of Mississippi that was used for this study. More schools in Mississippi can be used, and it could be extended to

the most obese states. A larger sample size may have yielded more accurate results. Additionally, as mentioned previously, standardized tests would not be the most beneficial method to measure students' academic performance. Another standardized assessment given during a normal school day rather than a highly monitored testing day.

### **Conclusion**

This study adds to the literature about childhood obesity from the mental health aspect. Although results were not statistically significant, means between the two groups indicated that obese students in this study had lower levels of self-esteem, interpersonal relationship satisfaction, and language and math scores with higher levels of anxiety and social stress. Interpersonal relationship satisfaction and self-esteem in particular were statistically significant between the two groups.

This study provided a new perspective for research on childhood obesity not only for school counselors, but all mental health professionals. Though focusing on the mental health aspect rather than the physical health aspect is not groundbreaking, investigating self-esteem, anxiety, social stress, interpersonal relationships, and academic performance all together has not been studied before.

School counselors can use this and future research to be proactive and utilize the ASCA National Model in their schools. By being aware of the possible risks associated with childhood obesity, school counselors can use early intervention and prevention strategies to make a difference not only with obese children but also within the entire school.

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APPENDIX A  
INSTITUTIONAL REVIEW BOARD APPROVAL

January 24, 2012

Robika Modak Mylroie  
115 Park Avenue  
Starkville, MS 39759

**RE: IRB Study #11-341: The Impact of Childhood Obesity on Personal, Social, and Academic Issues Among Middle School Students**

Dear Ms. Mylroie:

This email serves as official documentation that the above referenced project was reviewed and approved via expedited review for a period of 1/24/2012 through 1/15/2013 in accordance with 45 CFR 46.110 #7. Please note the expiration date for approval of this project is 1/15/2013. If additional time is needed to complete the project, you will need to submit a Continuing Review Request form 30 days prior to the date of expiration. Any modifications made to this project must be submitted for approval prior to implementation. Forms for both Continuing Review and Modifications are located on our website at <http://www.orc.msstate.edu>.

**Any failure to adhere to the approved protocol could result in suspension ! or termination of your project. Please note that the IRB reserves the right, at anytime, to observe you and any associated researchers as they conduct the project and audit research records associated with this project.**

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB's policies and procedures in the coming months. These changes will be posted online at <http://www.orc.msstate.edu/human/aahrpp.php>. The first of these changes is the implementation of an approval stamp for consent forms. The approval stamp will assist in ensuring the IRB approved version of the consent form is used in the actual conduct of research. Your stamped consent form will be attached in a separate email. You must use copies of the stamped consent form for obtaining consent from participants.

**Please refer to your docket number! (#11-341) when contacting our office regarding this project.**

**We wish you the very best of luck in your research and look forward to working with you again. If you have questions or concerns, please contact Christine Williams at [cwilliams@research.msstate.edu](mailto:cwilliams@research.msstate.edu) or call [662-325-5220](tel:662-325-5220).**

Sincerely,

Christine Williams, CIP  
IRB Compliance Administrator

cc: Kimberly Hall (Advisor)

APPENDIX B  
INFORMED CONSENT FORM



**Mississippi State University**  
**Informed Consent Form for Participation in Research**

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**Title of Research Study: The Impact of Childhood Obesity on Levels of Self-esteem, Anxiety, Social Stress, Interpersonal Relationship Satisfaction, and Academic Performance Among Students in 5<sup>th</sup>, 6<sup>th</sup>, and 7<sup>th</sup> Grades**

**Study Site:** Central School, West Point, MS; Fifth Street School, West Point, MS; Armstrong Middle School, Starkville, MS; East Webster Elementary, Mathiston, MS

**Researchers:** Robika Mylroie, Mississippi State University

**Purpose**

The purpose of this research is to understand the impact that childhood obesity has on children in middle school. Many students who are overweight or obese are bullied, become bullies, and/or have low self-esteem. Research has also shown that these factors, in turn, affect academic achievement as well. This research will examine these factors in order to help school counselors identify students who need early interventions and create a positive learning environment.

**Procedures**

On the first visit to your child's school, your child's height and weight will be measured by him/herself. On the second visit, your child will fill out two surveys. The first survey will ask general questions about the child such as race, gender, and age.. The second survey will ask your child how he/she feels about him/herself. On the third visit we will not meet with your child, but we look at MCT2 scores in order to assess academic performance. All questionnaires, weights, measurements, and test scores will use codes rather than using names. At no time will your child's name or any details be made public or associated with this research.

**Risks or Discomforts**

There should be no major risks or discomforts for your child. Feelings of sadness and anger may arise while completing the survey about how your child feels about him/herself. If your child feels sad or upset, he/she will be referred to the school counselor.

**Benefits**

This research will benefit students, school counselors, faculty and staff at the school by helping to identify what could affect academic performance.

**Incentive to Participate**

If you return this form, your child's name will be entered in a drawing for a \$25 gift card from Walmart. **Please note: Your child will be entered if you mark yes OR no.** The drawing will be held after the after the the researcher has collected all the information from students, approximately in two weeks.

**Confidentiality**

Confidentiality is extremely important to the researcher. Students' names will not be associated with the research. However, please note that these records will be held by a

state entity and therefore are subject to disclosure if required by law. Research information may be shared with the MSU Institutional Review Board (IRB) and the Office for Human Research Protections (OHRP).

### **Questions**

If you have any questions about this research project, please feel free to contact Robika Mylroie at 662-325-5113. You may also contact Mrs. Mylroie's faculty advisor, Dr. Kimberly Hall at 662-325-7116.

For questions regarding your rights as a research participant, or to express concerns or complaints, please feel free to contact the MSU Regulatory Compliance Office by phone at 662-325-3994, by e-mail at [irb@research.msstate.edu](mailto:irb@research.msstate.edu), or on the web at <http://orc.msstate.edu/participant/>.

### **Voluntary Participation**

Please understand that your child's **participation is voluntary**. Your **refusal to allow your child to participate will involve no penalty or loss** of benefits to which your child is otherwise entitled. Your child **may discontinue his/her participation** at any time without penalty or loss of benefits.

**Please take all the time you need to read through this document and decide whether you would like for your child to participate in this research study.**

Please indicate whether or not your child can participate in the study by checking one of the following:

Yes, I would like my child to participate in this study.

No, I would not like my child to participate in this study.

Child's Name: \_\_\_\_\_

Child's Homeroom Teacher: \_\_\_\_\_

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Investigator Signature

\_\_\_\_\_  
Date

You have received two copies of this form. Please keep one for your records, and return the other copy to your child's homeroom teacher whether you want your child to participate in the study or not.

APPENDIX C  
MINOR ASSENT FORM

## Minor Assent Form

Your parent knows we are going to ask you to participate in this project and survey. We want to know about how kids feel about themselves and and academic performance. It will take about two weeks of your time to complete this project. We will visit you at your school two different times. On our first visit, we will get your weight and height in a room by yourself. On the second visit, you will take two surveys. The first survey will ask general information about yourself such as your age, gender, and age. Your name will not be written anywhere on the surveys or any other form that is connected to this research. Your name will be replaced with a number, so that only the researchers will know you participated.

If you don't want to participate, you can stop at any time. There will be no bad feelings if you don't want to do this. You can ask questions if you do not understand any part of the project.

Do you understand?

Name (Please print): \_\_\_\_\_

Homeroom Teacher: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

School: \_\_\_\_\_

Investigator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

APPENDIX D  
ORAL SCRIPT

## Verbal Script for Recruitment

Hello,

My name is Robika Mylroie, and I am a PhD student at Mississippi State University. I am doing research on the impact of weight on behaviour and academic achievement. I am looking at all students.

I have a consent form for both you and your parent(s)/guardians to sign. I will give you your consent form after I receive the form from your parent(s)/guardian. If you and your parents/guardian agree to help me with this study, I will be weighing and measuring you individually to get your Body Mass Index. I will also be giving you two surveys: a demographic survey that asks you your gender, ethnicity, family organization, etc.; and a survey that asks about your self-esteem, anxiety, social relationships, and other behaviours.

If your parent(s)/guardian does not want you to participate, please bring back the form signed in the appropriate blank. You will not be punished or penalized for not participating. As long as you bring your form back (whether your parent(s)/guardian says yes or no) you will be entered in a drawing for a \$25 gift card to Wal-Mart.

Do you have any questions?

APPENDIX E  
BODY MASS INDEX SPREADSHEET FROM THE CENTERS  
FOR DISEASE CONTROL





APPENDIX F  
DEMOGRAPHIC SURVEY

Code: \_\_\_\_\_

School: \_\_\_\_\_

Grade: \_\_\_\_\_

Directions: Please answer the following questions as best you can. Please circle the answer that best describes you. If you have a question, please raise your hand and I will assist you.

1. What is your gender?      Male              Female

2. What is your age? \_\_\_\_\_

3. Please circle the ethnicity that best describes you:

White/Caucasian

African-American

Hispanic/Latino

Asian/Pacific Islander

Southeast Asian/Indian/Pakistani

African (from Africa)

Biracial/Mixed Race

Middle Eastern

Other (please describe): \_\_\_\_\_