5-2003

Weight preoccupation in middle school, high school and college females : the influence of self-esteem and locus of control

Gregory Lee Duthey

To the Graduate Council:

I am submitting herewith a dissertation written by Gregory Lee Duthey entitled "Weight preoccupation in middle school, high school and college females : the influence of self-esteem and locus of control." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Human Ecology.

Bill C. Wallace, Major Professor

We have read this dissertation and recommend its acceptance:

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

To the Graduate Council:

I am submitting herewith a dissertation written by Gregory Lee Duthey entitled "Weight Preoccupation in Middle School, High School, and College Females: The Influence of Self-Esteem and Locus of Control." I have examined the final paper copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Human Ecology.

Bill C. Wallace, Major Professor

We have read this dissertation
and recommend its acceptance:

Kathleen L. Davis, Ed.D.

Robert H. Kirk, H.S.D.

Jack S. Ellison, Ed.D.

Accepted for the Council:

Vice Provost and Dean of
Graduate Studies

Weight Preoccupation in Middle School, High School and College Females: The Influence of Self-Esteem and Locus of Control

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Gregory Lee Duthey

May 2003

DEDICATION

This dissertation is dedicated to several people who have provided unconditional support and guidance in helping with my personal and professional growth: to my pastors, Terrance Ryan and Eric Andrews, who stood by me when I needed help and helped me keep faith in extremely difficult times; to Marilyn Jacobson and Janet Leslie whose honesty and kind words were key to my future; to Dr. Victor Barr who listened to my concerns and helped me cope with adversity; to Dr. Teresa Hutchens who always believed in me and taught me about limits, brevity, and passion. Finally, this dissertation is dedicated to my maternal grandparents, John and Dorothy Hawley, who believed in the value of education and in the hard work ethic.

ACKNOWLEDGEMENTS

Throughout the course of my doctoral research, numerous people have provided support and assistance toward completion of my dissertation. I am especially grateful to my doctoral committee, Drs. Bill Wallace, Robert Kirk, Jack Ellison, and Kathleen Davis for their patience and understanding during the stages of completion of this study. My appreciation is also extended to the individual committee members for their cooperative efforts, and for providing complimentary support in the dissertation process.

It was my chairperson, Dr. Bill C. Wallace who encouraged me to apply for the doctoral program, and I am thankful for his persistence. His help early on during the literature review was very helpful. I am appreciative for his efforts in relating theory to my research topic, and for providing clarifications involving the findings and conclusions of this study.

Sincere appreciation is directed to committee member, Dr. Robert Kirk, for his early guidance with the review of literature. His encouragement for the use of an organizational scheme in Chapter 2 helped with grouping of studies by content, methodology, and content/methodology. Most notably, I appreciate his willingness to serve as surrogate chairperson and work closely with me when my chairperson was physically unable to do.

Special thanks is also given to committee member, Dr. Jack S. Ellison, for his continued unconditional mentoring throughout my graduate studies, and his encouragement in exploring the women's issues and health behavior. I am

especially grateful for his special attention and help with the construction of Chapter 1 (i.e., hypotheses, limitations, delimitations, etc), and for his critique related to all components of Chapter 5.

I am especially grateful for the help of two faculty members from the Department of Counselor Psychology/Education It was my outside department committee member and cognate professor, Dr. Kathleen Davis, who offered invaluable expertise in the presentation, evaluation, and interpretation of the statistical data. Sincere appreciation is also extended to Dr. Teresa Hutchens, who reviewed the final manuscript for form and content. I am also indebted to her for her endless encouragement and insight that helped me to more fully appreciate and understand gender issues.

Deep gratitude is given to statistical consultant, Cary Springer, who spent many hours assisting me with data entry, selection of statistical procedures, and interpretation of the statistical analyses. I am thankful for her positive attitude and patience, and for helping me gain comfort in working with the SPSS statistical software.

A special thanks is also extended to two Department of Health, Safety and Exercise Science faculty for their help is obtaining permission to do this study. I would like to thank Dr. Susan Smith for her early expertise and assistance in securing permission to use secondary school students in this study. My sincerest thanks also is directed to Dr. Paula Zemel, for her help in obtaining IRB approval for human subjects research; most notably her help in preparing and revising Form B.

Thanks are given to Mike Dalton, David Messer and Joel Giffin, administrators from the Maryville School District. It was their cooperative effort, and the effort of teachers and office personnel, that helped facilitate secondary school student participation.

My warm thanks is also extended to two individuals who reviewed the final manuscript for form and flow. I am appreciative of doctoral colleague Christi Hill who was gracious in time she spent editing. Special thanks are offered to dissertation consultant Heather Doncaster who helped reduce my frustration with completing all final format changes.

Finally, I am thankful that the completion of this dissertation was orchestrated by a higher power than I. It was through him that the efforts of all of these key players were complementary and I was able to "run the race and keep the faith".

ABSTRACT

Much of the prior empirical and theoretical literature has focused on the impact of low self-esteem and external locus of control in the etiology of clinical eating disorders. This study examined the influences of these variables and their impact on weight preoccupation in three different school group samples of females. Three hundred, seventy-eight female participants from middle school (N=98), high school (N=96), and college (N=184) were administered the Eating Attitudes Test (EAT-40), Rosenberg Self-Esteem Scale (RSES), and the Children's Nowicki-Strickland Internal-External Locus of Control Scale (CNSIE). The EAT-40 was used to dichotomize the three school groups (i.e., middle school, high school, college) into weight preoccupied (WP) and non-weight preoccupied (NWP) groups for comparisons using the dependent variables of self-esteem and locus of control. Additionally, the effect of low self-esteem and external locus of control was examined for its effect on weight preoccupation. Pearson Product-Moment correlations revealed that: (a) there was a significant relationship between female participants' ratings of self-esteem and weight preoccupation at all three school group levels; and (b) there was a significant relationship between locus of control and weight preoccupation in females in the middle school and high school groups, but not at the college level. Analysis of variance (ANOVA) indicated that: (a) there were significant differences in self-esteem between WP and NWP females in the college and high school groups; (b) there were no significant differences in self-esteem within the NWP group; (c) there were significant differences in self-esteem within the WP group; (d) there was a significant difference in locus of control between WP and NWP females in the high

school group; (e) there were no significant differences in locus of control within the NWP group; and (f) there were significant differences in locus of control within the WP group. In a supplemental regression analysis, the variables of locus of control (as measured by CNSIE), self-esteem (as measured by RSES), and weight differential, were significant predictors of weight preoccupation (as measured by the EAT-40) in the middle school and high school groups. Results from this study were discussed in relation to what is known about age-related differences in self-esteem and locus of control in eating disordered /weight preoccupied females. It was recommended that future research explore these same variables using grade instead of school groups, and that gender comparisons also be made. The limitations of this study were discussed along with quality of obtained data and implications for parents and health education.

TABLE OF CONTENTS

LIST OF TABLES

TABLE **PAGE**

LIST OF FIGURES

FIGURE **PAGE**

CHAPTER I

INTRODUCTION

It is generally agreed that both the incidence and prevalence of eating disorders has been increasing over the last 15 years in the United States (American Psychiatric Association [APA], 2000; National Association of Anorexia Nervosa and Associated Disorders [ANAD], 1991). The problem has spread to other developed countries, with up to 90 percent of the sufferers believed to be women. Studies by Mintz and Betz (1988) and others have reported that the percentage of undergraduate women with disordered eating attitudes and behaviors is nearly 60 percent and is rising. For adolescent and young adult women, the incidence rates of clinically diagnosed cases of anorexia and bulimia has been estimated to be 1-3 percent and 6-10 percent, respectively (Allison, 1995). To a great extent, the rate of occurrence depends on the measuring instrument employed, how the eating disorder is defined, and whether it is a clinical or non-clinical occurrence.

Clinical eating disorders are experienced primarily by females and involve severe disturbances in eating attitudes and behavior (APA, 2000; Schlundt & Johnson, 1990). The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) classifies eating disorders into three recognized categories: Anorexia Nervosa, Bulimia Nervosa, and Eating Disorders Not Otherwise Specified (APA, 2000).

Numerous research studies have shown that eating disorders stem from a combination of psychological, social, and interpersonal factors. Feelings of anxiety, depression, inadequacy, and loneliness, as well as troubled family and personal relationships may contribute to the development of an eating disorder (ANAD, 1991; Eating Disorders

Awareness & Prevention [EDAP], 1998). Additionally, our culture's idealization of thinness and the "perfect body" have also been associated with propagating disordered eating behaviors (EDAP, 1998; Worsnop, 1992).

While the three main eating disorders vary in their cause, incidence, and age of onset, they do share certain similarities (APA, 2000; Garner & Garfinkel, 1997; Smolak, Levine & Striegel-Moore, 1996). Two of those similarities, namely, low self-esteem and external locus of control, were the focus of investigation in this study.

Statement of the Problem

To the extent that it can be determined, the literature reveals a paucity of evidence as to how locus of control and self-esteem are related to weight preoccupation in middle school, high school, and undergraduate college females. Therefore, this study is to fill the void that exists in the literature.

Purpose of the Study

The primary purpose of this study was to determine if there was a significant difference in self-esteem and locus of control in a non-randomly selected sample of weight preoccupied and non-weight preoccupied middle school, high school, and undergraduate college females. A secondary purpose of this study was to generate further evidence of the relationship of locus of control and self-esteem to weight preoccupation in middle school, high school, and undergraduate college females.

Hypotheses

The following four null hypotheses were tested to address the purposes of this investigation:

1. There would be no significant difference in the level of self-esteem of weight

preoccupied and non-weight preoccupied females at each school group level.

2. There would be no significant difference in the locus of control orientation of weight preoccupied and non-weight preoccupied females at each school group level.
3. There would be no significant relationship between the level of self-esteem and weight preoccupation in females at each school group level.
4. There would be no significant relationship between locus of control and weight preoccupation in females at each school group level.

Need for the Study

The problem of eating disorders is not a new phenomenon and is a health problem that began to get early attention by Hilde Bruch (1978) in the late 1970's. By the early 1980's, the problem started to receive major attention by the media, researchers, and clinicians (Hsu, 1990). More recently, eating disorders have become an increasingly prevalent problem in adolescent females and young women (EDAP, 1998). Overall, it has been estimated that eight million Americans suffer from clinical eating disorders, namely, anorexia, bulimia, and compulsive overeating (Worsnop, 1992). It has also been estimated that about 3-6 percent of individuals with a serious case of an eating disorder will die. This is a greater death rate than any other mental illness (ANAD, 1991). The necessity for added research in the area of eating disorders cannot be overemphasized.

Allison (1995) reported basic agreement by experts regarding the general psychological profile that characterizes an individual with a clinically diagnosed eating disorder. Personality variables such as low self-esteem, external locus of control, depression, anxiety, and dependency have been suggested to be key components of the eating disordered profile.

The assessment of personality and/or psychological variables (e.g., self-esteem, locus of control) in individuals with non-clinical eating disorders is important for several reasons. Although an individual may not be clinically diagnosed, their personality features may be relevant to the treatment and/or etiology of the eating-related disorder. In addition, a personality feature such as low self-esteem may develop as a consequence of experiencing eating-related disorders, and this feature itself, could become a focus of intervention.

Over the past 20 years, substantial research has been conducted describing the self-esteem of anorexics, bulimics, and compulsive overeaters in clinical populations (Devilliers, 1992; Hood, Timothy & Garner, 1982; Williams et al., 1993). Numerous studies have also investigated the locus of control orientation for such clinically diagnosed eating disordered individuals (Greenberg, 1996; Hood et al., 1982; Shisslak, Pazda, & Crago, 1990). This evidence suggests that a substantial relationship exists between low self-esteem and disordered eating habits, and between external locus of control and disordered eating habits.

Various studies have also been conducted describing the self-esteem and locus of control of weight preoccupied individuals in non-clinical populations as well (Beren & Chrisler, 1990; Greenberg, 1996; Mayhew & Edelmann, 1989; McCanne, 1985; Zraly, 1995). From these studies, the results support the premise that low self-esteem and/or external locus of control are predisposing factors for the development of eating problems.

Despite the ever-increasing amount of research regarding clinical eating disorders and their psychological correlates, there is to date, only a limited number of studies that have attempted to describe, specifically, the self-esteem and locus of control of non-clinical

weight preoccupied individuals. Still fewer investigations have looked at self-esteem and locus of control among weight preoccupied females in a non-clinical setting, while comparing these variables across age, grade, or school levels. Finally, very few reported major studies have utilized a questionnaire as the sole means to dichotomize a population into weight preoccupied and non-weight preoccupied groups for the purpose of evaluating psychological correlates.

Reaffirming or negating relationships between the aforementioned variables would serve to justify additional attention placed on issues linking self-esteem, locus of control, and eating disorders. This reaffirmation or negation would also provide rationale for the implementation of training programs to raise student's self-esteem and foster greater internal locus of control. A better understanding of relationships among such variables in non-clinical populations, and particularly middle schools, may help prevent some cases from becoming severe enough to warrant clinical attention.

Basic Assumptions

The following assumptions were made for this investigation:

1. Self-esteem could be defined and measured.
2. Locus of control could be defined and measured.
3. Weight preoccupation could be identified and measured.
4. Female students could accurately be dichotomized into weight preoccupied and non-weight preoccupied groups on the basis of the EAT-40 cutoff score.
5. The grouping of females into three school groups would be effective in providing three different comparison groups.
6. The instruments used to measure self-esteem, locus of control, and eating disordered

attitudes/behaviors would be valid and reliable.

7. Subjects in the study would be those females without a clinical diagnosis of anorexia, bulimia, or compulsive overeating.
8. It was assumed that all subjects would honestly and accurately answer all statements on the questionnaires.
9. Grade 10-12 female subjects would complete the survey at home without assistance from family or friends.

Delimitations

The major delimitations for this investigation were as follows:

1. This study was delimited to middle school and high school female students attending Blount County secondary schools in Maryville, Tennessee during Spring 2000.
2. This study was delimited to age 11-24 female undergraduates attending the University of Tennessee-Knoxville during the 2000 school year.
3. This study was delimited to a global measure of self-esteem and a global measure of locus of control.

Limitations

The following limitations existed for this investigation:

1. The Eating Attitudes Test (EAT-40) is a screening instrument and therefore could not distinguish if weight preoccupation was due to a mental state or represented personality traits.
2. Disproportionately unequal numbers of weight preoccupied and non-weight preoccupied females would likely exist at each grade level.

3. An unequal number of students from each grade would comprise the middle school, high school, and college groups.
4. Results from this study could not be generalized to populations other than combined-grade middle school, high school, and college females.
5. Response rate for surveys sent home with grade 10-12 females could be lower than for students completing the survey in grade 6-9 health classes.
6. Validity could have been compromised by using the recommended EAT-40 cutoff score of 30, instead of upper and lower percentiles, when dichotomizing the sample into weight preoccupied and non-weight preoccupied groups.
7. The use of the children's version of NSIE instrument in age 18-24 females may have influenced the responses in the college group.
8. Reading levels of the middle school subjects may have varied, and had an effect on responding to items on the EAT, CNSIE, and SES.

Definition of Terms

The following classifications, words, and phrases were adopted for use as they relate specifically to this investigation:

1. Middle School Subjects (MS): female students, age 11-14, enrolled in grades 6-8 of Tennessee public school system during Spring 2000.
2. High School Subjects (HS): female students, age 14-18, enrolled in grades 9-12 of Tennessee public school system during Spring 2000.
3. College Female (C): undergraduate female students, age 18-24, who were enrolled in Psychology 110 during Spring 2000 at the University of Tennessee-Knoxville.

4. School Group /School Level: female students in this study who were part of the middle school, high school, or college groups.
5. Health and Nutrition Survey (HNS): five-page questionnaire used in this study which included demographic information, and items from the Rosenberg Self-Esteem Scale (RSES), Eating Attitudes Test (EAT-40), and Nowicki-Strickland Internal-External Locus of Control Scale (CNSIE).
6. Weight Preoccupation (WP): those attitudes, feelings and behaviors concerning eating, shape and weight, and those psychological traits associated with eating disorders, as measured by Garner's Eating Attitude Test-40 (EAT-40).
7. Self-Esteem (SE): an individual's global feelings of self-worth or self-acceptance, as defined by Rosenberg (1965) and measured by Rosenberg's Self-Esteem Scale.
8. Locus of Control (LOC): an individual's generalized expectancy about the causation of reinforcements or outcomes as being attributed to internal or external forces, as as measured by the Adult and Children's versions of the Nowicki-Strickland Internal-External Locus of Control Scale.
9. Non-Weight Preoccupied Females (NWP): middle school, high school, and college females achieving a total score of 29 and below on the EAT-40 who were not considered to be weight preoccupied.
10. Weight Preoccupied Females (WP): middle school, high school, and college females achieving a score of 30 or above on EAT-40 who were considered to be weight preoccupied.

Theoretical Framework

It may be that the most meaningful way to understand the development and maintenance of eating disorders in young women is by using developmental theory of personality. As addressed in Chapter II, numerous etiological considerations regarding eating disorders have been proposed such as socio-cultural and developmental perspectives. Three factors in the current investigation justify the use of a developmental theoretical perspective on the emergence of eating disorders. First, eating disorders have been found to be common in adolescence and young adulthood. Second, this study focuses on a sample of females in adolescence and young adulthood. Third, foundations of self-esteem are laid down in adolescence, and there exists a close relationship between self-esteem and development of an eating disorder. Hence, these three factors warrant looking at this issue from a developmental point of view. Self-esteem development is discussed later in Chapter II.

Erikson's Psychosocial Theory of Personality Development (Erikson, 1982) can be used to explain the problem of eating disorders. Using his model, stages 4-6 would have particular relevance in the current study because of the ages (i.e., ages 11-23) of females being sampled. Stage 4 (latency) involves prepubescent psychosocial development in terms of skill competence in the neighborhood and school. It is in stage 5 (adolescence) that the physical changes of puberty occur, and an integrated sense of self occurs involving peer groups and outgroups. Stage 6 (early adulthood) entails becoming independent from one's parents, and the development and maintenance of relationships at work and with friends and intimate partners.

Within his developmental framework, Erikson especially emphasized cultural influences and social contacts. He argued that each individual must negotiate a series of psychosocial crises, resulting in either positive or negative outcomes. To successfully progress through a particular stage meant that significant social contact impacted the positive crisis resolution (Weiten & Lloyd, 2003).

The focus that Erikson put on adolescence as being a critical period has particular relevance for development of eating disorders. The relationship between eating disorders and adolescence could be better understood when considering that adolescence can be an intense time of physical/psychological change. It is during adolescence that individuals struggle to revise their self-image. Erikson would argue that without the formation of stable identity, mental illnesses such as eating disorders could develop.

The Eriksonian explanation of eating disorders would not deny influences at stages 3-4 (i.e., initiative vs. guilt and industry vs. inferiority), but would argue that parental and school influences could contribute to underdeveloped self-esteem and feelings of inferiority. The cultural influences during these earlier stages can be seen in terms of unfair standards being tied to a young girl's self-esteem and to body image development.

By adolescence, Erikson would argue that girls already have lower self-esteem than boys because identity is more focused on the physical body in females. The body becomes the core part of a female's self-concept during adolescence. Everything revolves around the body and changes during puberty can have negative and positive effects on identity. Less emphasis is often placed on a young woman's cognitive abilities during this time as well. The end result for many adolescent girls is a poorly integrated self, which could contribute toward developing an eating disorder.

Organization of the Study

Chapter 1 presented the statement of the problem, need and purpose of the study, and established study limitations, delimitations, and basic assumptions. Hypotheses were also delineated in this chapter and operational definitions were provided for this investigation. Chapter 2 contains an extensive review of the relevant literature. The review discusses the personality constructs of self-esteem and locus of control, their relationship to each other, and their relationship to eating disorders. In addition, Chapter 2 reviews the instruments that were used to collect information about self-esteem, locus of control, and eating disordered attitudes/behaviors. Chapter 3 describes the methodology that was used to collect the self-reported behavioral data, the validity and reliability of selected instruments, and the population that was used in this study. Chapter 4 contains the analysis of the data. Chapter 5 provides a description of the findings and conclusions, and provided recommendations based on obtained data. Chapter 6 is a retrospective view of the factors which were not a part of the original study, but were still considered important enough to be discussed.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The amount of literature generated about eating disorders in the past 10 years is quite remarkable. Even more impressive is the vast number of studies that have investigated the constructs of self-esteem and locus of control over the last 30 years. This study sought to determine the relationship of self-esteem and locus of control to eating disordered attitudes/behaviors in females age 11-24, who had not been clinically diagnosed as eating disordered.

This chapter contains an overview of the literature and research related to self-esteem, locus of control, and eating disorders. Specific sections focus on theory as it relates to self-esteem development, and theory involving locus of control. Special effort has been made to define the independent variables and to describe difficulties measuring the independent and dependent variables. In addition, an overview of various behavioral instruments used in measuring the independent and dependent variables has been provided in this chapter. Finally, there is discussion about how self-esteem, locus of control, and eating disorders are interrelated.

Research and Literature Related in Content

Eating Disorder Etiological Considerations

One of the first explanations concerning the etiology of eating disorders was proposed by Garner and Garfinkel in 1982. This early theory suggested that the interplay of predisposing factors and precipitating events could lead to an eating disorder (Lemberg,

1992). Since the early 1980's, many theories and factors involving eating disorders have been presented and researched in detail.

A review of the literature finds three or four main theories concerning etiological factors involved in the development of eating disorders. Wren and Lask (1993) and Silverstone (1992) organized the commonly accepted etiological factors into three groups: biological, psychological, and sociocultural. Others researchers have presented a developmental perspective for consideration. This paper will address four etiological factors: biological, sociocultural, developmental, and psychological.

Biological. Probably the least substantiated of the proposed etiologies is the explanation which suggests biological causes as being part of the development of eating disorders. Early evidence of a genetic component was demonstrated by Theander (1970) who found a 6% incidence rate of anorexia nervosa in sisters of patients. In a study by Holland, Sicotte and Treasure (1988), additional convincing evidence was found when comparing prevalence rates of anorexia for sisters, monozygotic twins, and for parents of eating disordered individuals. Some evidence for the biological component was also suggested by Pope, Hudson, Jonas, & Yurgelun-Todd (1983) where individuals with eating disorders were found to experience symptoms of depression. Other evidence by Viesselman and Roig (1985) indicated the possibility of a genetic component. The Viesselman and Roig study found that individuals suffering from anorexia nervosa had more relatives with anorexia and bulimia, as compared to individuals free of anorexia who had fewer relatives with eating disorders.

Sociocultural. One of the more substantiated etiologies is the sociocultural explanation that attributes the cause of eating disorders to the "internalization of cultural

values and standards concerning the importance of thinness and beauty as central in the formation of self-concept" (Abrams, 1993). Females have long been socialized to be dependent and culturally conditioned in such a way that self-esteem is directly linked to physical appearance (Wilson, 1984).

It is in childhood where females learn from television, parents, peers, and society that one's appearance is important. One might easily agree that commercials, books and toys have influence on impressionable young girls and serve to help internalize the ideals of thinness and beauty. Children become exposed to both the stigma and hatred directed toward one being obese.

Today there exist great cultural pressures on women to be thin and to diet. These pressures have been associated with an increased incidence of eating disorders such as bulimia nervosa and anorexia nervosa. The cultural ideal may affect adolescent girls and young women because they are probably more likely to succumb to the cultural ideal of the time (Banner, 1983). It is also likely that these girls and young women also believe that weight control means having self-control, which in turn leads to beauty and success (Pyle, 1986). Despite the physiological and psychological costs, women have been placed into a forced-choice situation of conforming to a specific societal standard of beauty or be judged by society.

Developmental. Another etiological consideration linked to eating disorders involves developmental perspectives. Evidence for this etiological factor can be found during puberty where the adolescent female may become overwhelmed with all of the hormonal/biological changes that begin to occur in her body. The adolescent female's perception of self can become disrupted as she tries to become familiar and comfortable

with her "new body" and "new self-concept". This occurs because being fat is seen as a sign of weakness and also as undesirable, and therefore, many adolescent girls will develop lower body esteem than their male counterparts (Bruch, 1978).

For adolescent girls, self-esteem/self-concept is an interpersonal construct by which they see themselves in terms of how others view them (McGuire & McGuire, 1982). According to Bruch (1978), the eating disordered female experiences herself as not owning her own body and not being in control of her impulses, needs, or behaviors. Her actions are based on the belief that her body and her behavior are the result of others actions and influence. Simmons and Rosenberg (1975) found that adolescent females have a less stable self-image than males and are more "sensitive" to others' evaluations of them. It has also been found that girls are more insecure and more self-conscious and tend to avoid such evaluations (Hill and Lynch, 1983).

Psychological. The fourth etiological explanation purports that psychological causes contribute toward the development of an eating disorder. Studies by Palmer (1979), Bram, Eger, and Halmi (1982), and others have indicated the presence of a variety of personality disorders and levels of personality disorganization in females with eating disorders.

Numerous studies have found that individuals with eating disorders are subject to depression (Piran, Kennedy, Garfinkel & Owens, 1985) and further satisfy the diagnosis for an affective disorder (Pope et al., 1983). Researchers have also noted high degrees of compulsiveness in those with eating disorders as evidenced by their abuse of food in combating stress (Squires, 1986). Other studies have found increased dysphoric and

fluctuating moods in eating disordered individuals as compared to controls (Johnson, 1982).

Halmi (1983) found that anorexics and bulimics experienced a greater incidence of impulsive behaviors and well-defined personality disorders. Behaviors and disorders such as alcohol abuse, substance abuse, self-mutilation, suicide attempts, and stealing were reported to be more common in eating disordered individuals. It has been suggested that women may engage in binge eating and starvation in an attempt to deal with negative feelings of self or to fill an emptiness and thus feel rewarded.

Overview of Self-Esteem

Self-esteem is an important and popular construct in psychological research and in everyday life. Along with intelligence, self-esteem may be the attribute that is most commonly considered when discussing the level of social functioning and type of personality of individuals (Wells, 1976). There probably is no value-judgement more important and no factor more critical in motivation and psychological development than the feeling one has about oneself. This self-evaluation affects one's emotions, thinking processes, goals, values and is a significant key to one's behavior (Branden, 1969). Therefore, it is worthwhile to briefly look at the following areas: definition of self-esteem, significance of self-esteem, causes of low self-esteem, and measurement of self-esteem.

Definition of Self-Esteem

It is not within the scope of this study to provide definitions of self-esteem from the plethora of literature reviewed. The popular definition of self-esteem would describe it as the extent to which someone prizes, likes, values or approves of oneself. However, in the

social sciences, self-esteem is the overall affective evaluation of someone's worth, value or importance. It is a quantifiable hypothetical construct that is expressed as the sum of evaluations over various attributes of one's personality or self (Blascovich & Tomaka, 1991). Unfortunately, sometimes confusion exists because the concept of self-esteem can be referred to by a variety of names such as self-concept, self-acceptance, self-respect, self-worth, and self-regard.

Rawls (1992) and Branden (1969) describe self-esteem as having two interrelated aspects which are inseparable in one's psychology: namely self-confidence and self-respect. Self-confidence entails a sense of personal efficacy and the conviction that one is competent to live. Self-respect refers to the sense of personal worthiness and that one is worthy of living. In short then, an individual makes him or herself worthy of living by making him/herself competent to live (Branden, 1969).

There is general agreement that self-esteem is one part of a broader representation of the self: namely, one's self-concept (Blascovich & Tomaka, 1991; Fitts, 1965, Rosenberg, 1979). Self-concept is often thought to be more inclusive and including affective, evaluative, cognitive, and behavioral components. Self-esteem, however, is frequently thought to be more of an evaluative component of self-concept.

According to Wells (1976), definitions of self-esteem seem to be one of four basic types. Most often, self-esteem is often defined in terms of a set of attitudes such as with Rosenberg's conceptualization. This conception views self-esteem as a process in which a person perceives his or her characteristics and reacts to them behaviorally and/or emotionally. In other instances, self-esteem is defined in terms of relationships between attitudes. This conceptualization purports self-esteem as being how a person actually

perceives him or herself with respect to how one ought to be or might be. At other times, self-esteem is defined as a set of psychological responses. This conceptualization is related to the attitudinal and perceptual processes above, however, self-esteem is defined by how persons react to the processes or what such processes feel like. Finally, self-esteem can be defined as a personality function. With this conceptualization, self-esteem is simply one's lifestyle, referring to a style of self-presentation or expected success.

In summary, it is important to keep in mind that the term self-esteem may have slightly different meanings in terms of the study itself and the instrument selected. However, for the purposes of this study, the meaning of self-esteem was Rosenberg's definition, which suggests that self-esteem is a favorable or unfavorable attitude toward oneself. It is also a process where an individual perceives one's characteristics and reacts to the characteristics behaviorally or emotionally.

Significance of Self-Esteem

In a general sense, self-esteem is important as it relates to personal satisfaction and effective functioning (Coopersmith, 1967). Possibly of greatest importance, is that self-esteem may serve to guide, regulate, and mediate one's behavior. On the other hand, self-esteem may also be derived from behavior (Hattie, 1992).

Self-esteem has been shown to be highly influential in much of an individual's behavior. For example, those who have low self-esteem tend to act in deviant ways (e.g., drinking, smoking, drug abuse, eating disorders), and often see themselves as worthless. Those individuals with unrealistic views of self often approach life and others in an unrealistic manner (Fitts, 1965).

Individuals with high self-esteem believe that at least certain aspects of the self are worthwhile and have confidence to achieve their expectations. Those with high self-esteem are not threatened by success and strongly believe that successes can be repeated. Having high self-esteem allows individuals to more easily adapt to strange environments and differences among others, and gives individuals greater control over their role in society (Hattie, 1992; Rosenberg, 1979).

Development of Self-Esteem

As outlined by Erik Erikson, adolescence extends from approximately 12 to 18 years of age. However, Hamachek (1988) argued that the characteristics associated with this time period are not to be rigidly connected to the age boundaries, but to be used as general guidelines. In order to comprehend the development of self-esteem during adolescence, an understanding of a theoretical perspective that outlines general development is necessary. Erikson's theory has been and is still considered critical in developmental research.

Erikson created an eight-stage theory to conceptualize lifespan development in which he theorized that each life stage is built on previous stages through stage-related psychosocial crises. How an individual develops depends on how he or she confronts and chooses to deal with crises (Erikson, 1982). To increase the chances of healthy psychological growth in later stages, earlier stage crises need to be successfully resolved (Hamachek, 1988; Waterman, 1984).

An integral time within Erikson's life span theory, adolescence, is the period of identity formation/identity confusion. Although other identity crises occur in adult life, it is during adolescence that the "first explicit contact with and recognition of one's true self

occurs" (Waterman, 1984). Harter (1983) believed Erikson's outline of identity formation to be the most "cogent and comprehensive analysis" for understanding self-concept during adolescence, and there is little theory beyond Erikson's to help in understanding in this area.

Rosenberg (1986) suggested that self-concept and self-esteem go through fundamental changes from mid-childhood until at least late adolescence. He proclaimed the adolescent time period as the time in life when the conception of self "emerges, evolves, and crystallizes". Rosenberg posited, however, that the premise that one's self-concept is permanently fixed before reaching adulthood is false. His view would agree with Erikson's observation that adolescence is the initial period of identity formation. Waterman (1984) further added that the development of a self-reflective sense of identity does not truly begin until the high school years, with the greatest gains being made during the college years.

Many experts agree that self-esteem is a fairly stable structure, merely changing in response to major changes in adult life. The individual's global self-esteem is believed to be established during childhood and receives significant "shaping" and "modification" during adolescence. Therefore, it seems that any developmental and preventive views about self-esteem should focus on the development of self-esteem during childhood and adolescence.

Numerous developmental perspectives exist which consider how self-esteem evolves in an individual. Mruk (1995) states that the developmental scheme of self-esteem can be considered to be a three-stage process, including early childhood precursors, emergence during middle childhood/adolescence, and the role of adult self-esteem. Others such as

Cotton (1983), have described the development of self-esteem in terms of distinct phases including infancy, toddler, preschool child, school-age child, and adolescence. Regardless of the perspective chosen, most researchers would agree that childhood and adolescence are quite significant in terms of self-esteem development.

Early childhood development of self-esteem (up to about age 5) is scant in relation to experimental research, as most of a child's experience during this time is preverbal and subject only to observation and inference. Additionally, the self is largely unformed, even if the child can communicate with words and symbols (Newman & Newman, 1987). However, the two issues of competence and worthiness do emerge in early childhood, two aspects which seem to be both developmental precursors and components of self-esteem (Mruk, 1995).

With regard to health development of self-esteem, it is important that the child execute certain acts competently early in life. The successes and failures for children are psychologically important because they lead the person to a feeling of mastery/power/efficacy, or alternately to a feeling of inadequacy, powerlessness, or incompetence (Mruk, 1995; Owens, 1995). Worthiness, on the other hand, may actually precede competence because the value-laden environment is already in place and has defined what is desirable, good, or unworthy. Where worthiness depends on how others respond to the child, competence depends on how the child responds to others, most notably, the child's parents (Cotton, 1983; Mruk, 1995).

In middle childhood and adolescence, one's self-esteem is increasingly influenced by peers, teachers, neighbors, babysitters, siblings, and extended family members. However, not all relationships have the same influence on self-esteem. In fact, it is the

attitudes, opinions, and behaviors of trusted and valued people that have the most significant impact on a young person's self-esteem (Mack, 1983; Mruk, 1995).

Also during middle childhood, children begin evaluating their own attributes and actions, comparing them against social values or standards. It has been suggested that it is this period from about age 6 to 12 where self-esteem first emerges, with a global level of self-esteem becoming consolidated by approximately age 12 (Newman & Newman, 1987; Mruk, 1995; Rosenberg, 1979).

During adolescence, the individual experiences rapid and dramatic cognitive, physical, and social changes that further affect self-esteem. Introspection and abstract thought are important in terms of the impact that certain events may have on self-esteem. There is also a "refocusing on the body" during puberty which endangers one's childhood self-image. Even though the esteem of others is important in adolescence, there is shift to that which comes from within (Rosenberg, 1979). Finally, it is during adolescence that self-esteem becomes more dependent on teachers and peers and less dependent on parents. Thus, peers, rather than parents, may be more suitable sources of positive self-esteem for the adolescent (Cotton, 1983).

In addition to describing how self-esteem evolves during childhood and adolescence, several developmental trends have been suggested by Cotton (1983) to occur with regard to self-esteem formation: (1) There is enhancement of self-esteem upon successful negotiation of each developmental phase/period; (2) There is a lowering of self-esteem occurs upon movement from one phase to another; (3) During development, the individual moves from heavy reliance of external sources of self-esteem to greater

reliance on internal sources; and (4) One's self-esteem will always have some degree of dependence on praise, recognition, and validation from external sources.

It seems certain, then, that the development of a child reveals the significance of multiple sources of self-esteem. These sources have a differential influence on both the origin and sustenance of self-esteem at various points in a person's life cycle. Children form their evaluations of self from two main sources: inner and outer. Outer self-esteem is associated with how others respond to us and is exemplified when children evaluate and value themselves in congruence with the general reactions of others toward them. Inner self-esteem is based on self-evaluations derived from one's actual competencies and behaviors (Owens, 1995). Individuals with good/high self-esteem tend to feel worthy, proud, effective, and enthusiastic. An individual with poor/low self-esteem often feels helpless, unworthy, and shameful. Included below is an examination of why/how a person might develop poor self-esteem.

Causes of Low Self-Esteem

It is not within the scope of this paper to address causes of self-esteem in a highly detailed fashion. However, it is worthy of briefly considering a model of antecedents and correlates of self-esteem. Harter (1993) proposed a model in which competence in domains of importance and social support independently affect self-esteem. In particular, Harter argues that the domains of peer likability, physical appearance, and athletic competence are more related to peer support, while domains of behavioral conduct and scholastic competence are more related to parent support. Both the parent/peer support and domain-specific self-concepts influence one's global self-esteem.

Although there exist other models explaining causes of low self-esteem, there seems to be some general agreement in the literature, and several summary statements can be made at this point. First, childhood itself can present three kinds of problems affecting self-esteem development and self esteem as an adolescent and as an adult. One problem may occur when factors such as learning disabilities, unsupportive/abusive parents, behavioral problems, or social/economic deprivation reduces one's worthiness and/or competence. Another problem may occur in terms of conflicting values, such that the child may not like, desire or respond to the expectations associated with a new social environment. One final problem may occur if the child finds opportunities to develop skills, resulting in lack competencies needed to be successful in a particular environment (Mruk, 1995).

Second, older children and adolescents may manifest low self-esteem because our society is one which places great value on physical attractiveness, scholastic competence, athletic performance, appropriate behavioral conduct, and social acceptance. Since the majority of youth seek to be in the cultural mainstream, some may feel inadequate if they lack such features in magnitude or in number (Harter, 1993).

Third, there are many reasons why some individuals develop low self-esteem and maintain it over time. Single traumatic events can lower self-esteem, and the cumulative effect of events, behaviors, and feedback from others can produce negative self-esteem (Harter, 1990; Rosenberg, 1979; Steffenhagen, 1987).

Last of all, it is virtually impossible to prove causality with regard to the antecedents of low self-esteem. This is because separation of single antecedents can't be done, nor can confounding variables be controlled for. There is also the difficulty of determining if

a certain factor caused low self-esteem or vice versa. Therefore, it is probably better to consider low self-esteem as being associated with certain factors rather than caused by them (Smelser, 1989).

Difficulties in Measuring Self-Esteem

The operational format often used in measuring self-esteem is the psychometric procedure of self-report, in which respondents numerically rank the degree of appropriateness of a set of verbal descriptions (Wells, 1976). It should be remembered, however, that the valid measurement of self-esteem can be difficult due to a combination of conceptual and methodological problems.

Conceptual problems can occur because the concept of self-esteem is used concurrently in both the language of lay people as well as academic psychologists. This could result in the creation of an "illusion of a universally accepted, well-defined, phenomenological entity", because of substitution of common language ideas of self-esteem for more precise scientific notions (Blascovich & Ginsburg, 1978; Wells, 1976).

Specific conceptual problems may also affect the validity of self-esteem measurement. For instance, researchers such as Rosenberg (1965) and Gergen (1965) described self-esteem as an attitude and evaluative component of self-concept. Others, such as Fleming and Courtney (1984) and Shavelson (1976), suggested that there are facets of self-esteem which contribute to a total level of esteem. Still others (Wells, 1976) suggested that self-esteem is conceptually more complex, involving discrepancies between actual and ideal self.

Because of the subjective nature of self-esteem, measurement has been performed primarily by self-report. Methodological problems often center around the merits of

using direct or indirect self-report measures. It seems that researchers prefer the simple direct measures, as evidenced by their dramatic increase in use. Most commonly, self-esteem is measured in adults and adolescents using Likert-type or dichotomous responses to a number of items which are summed to a total score (Blascovich & Tomaka, 1991).

Two other methodological problems may hinder valid measurement of self-esteem and are related to measurement specificity and the social desirability of high self-esteem. With regard to measurement specificity, some (e.g., Shavelson, 1976) believe that specific measures based on facets of the self are best, while others (e.g., Rosenberg, 1965) support using more global measures. Social desirability can also be a methodological problem in that self-esteem scores may be inflated due to individuals responding in a way to present one's self-esteem as higher than it actually is.

The development of measures of self-esteem involves more than conceptual explicitness. As Wells (1976) argues, it also means that self-esteem must be described in a way that allows observations to be objective, quantitative, and standardized.

Overview of Locus of Control

The attention given to the locus of control construct during the late 60's and early 70's was of massive proportions, but during the following 15 years, the interest in the locus of control construct diminished significantly. Although interest declined overall, there was still significant research published by Phares (1976) and by Lefcourt (1976; 1981; 1983). Much of the more recent research has been exploratory, in which locus of control is suspected of being a contributing factor to a variety of abnormal behaviors. The locus of control construct, unlike other constructs, is most often used as a personality characteristic and therefore considered to have some degree of universal generalization.

Theoretical Background Involving Locus of Control

The theoretical background involving locus of control finds that the term originated from Rotter's Social Learning Theory (SLT). According to Rotter (1972), locus of control is a generalized expectancy relating to the connection between one's actions and/or personal characteristics and the outcomes one experiences. Locus of control is an abstraction which develops from numerous specific encounters in which individuals perceive causal reasons for occurrences in their lives (Lefcourt, 1991; Rotter, 1972).

Within Social Learning Theory, individuals are described as having internal or external expectations regarding causation and, in particular, control of what happens to oneself. Internal control is the belief that outcomes are determined by one's personal efforts, while external control is the belief that outcomes are not determined by an individual's personal efforts. (Rotter, 1982).

Since its inception, Social Learning Theory has been a valuable tool for analyzing a variety of problems. Most of the applications of the SLT have dealt with research involving internal versus external locus of control (Rotter, 1982). SLT has been applied to problems of social importance such as deviant behaviors like addictions and delinquency. It is postulated that SLT could also be applied to the problem of eating disorders, with the goal of better understanding and treatment of the problem. In addition, SLT has the potential to indirectly change attitudes toward internal/external locus of control in education of young people, by providing skills used to better one's life.

Often when environments are extreme in terms of opportunity, individuals will discuss the opportunities and social constraints based on the assumption that behavior would change if the environment did. However, when environments are not extreme and

constraints not pervasive, causal perceptions are seen as personality characteristics (Lefcourt, 1976; Lefcourt & Davidson-Katz, 1991). Many people today are not willing to accept responsibility for their actions and may even practice victim blaming. It is not surprising then, that research with locus of control is focused on the failure of individuals to act on their own behalf in attempting to alleviate an unpleasant situation (Lefcourt, 1991; Rotter, 1982).

Definition of Locus of Control

It is not within the scope of this study to discuss all of the "definitions" or "cognates" of locus of control, but a number have of them been suggested (e.g., Langer, 1983; Levenson, 1981; Nowicki & Strickland, 1973; Paulhus & Christie, 1981; Seligman, 1975). Instead, for the purpose of this study, locus of control will refer to one's "assumed internal states". These internal states serve to explain why certain people deal with difficult circumstances in an active, willing, and resilient fashion, and others are "caught up" in a variety of negative emotions (Lefcourt, 1976).

Locus of Control and Self-Esteem

Few sources were found which investigated the relationship between internal-external locus of control and self-esteem. Several researchers have reported that Rotter's construct of internal-external control may be connected to self-esteem and have suggested a strong relationship based on Ziller's conceptualization of the self (Fish, 1971; Fitch, 1970; Platt, 1970). In particular, they posit that high self-esteem is related to an internal locus of control (Fish, 1971; Sathyavathi, 1984).

The Platt (1970) study reported inconsistent correlations between the Ziller Social Self-Esteem Scale and Rotter's I-E Scale for three small samples of college students (e.g.,

females, -.20, males, -.17, males, +.17). These findings indicated that high self-esteem was related to low control (i.e., external) in females but variable in male samples. Other studies by Fish (1971), Ryckman (1973), and Smith (1973) found a moderate correlation (-.28 to -.37) between self-esteem and locus of control for males. Results for females in the Ryckman (1973) and Smith (1973) were mixed, with correlations ranging from -.20 to +.07, indicating a slight relationship between high self-esteem and low external control.

Research and Literature Related in Methodology

Rating Scales & Mental Health

In the field of psychology, one of the most popular ways to collect information from a large and dispersed number of people is by use of the survey method. Collecting this information is often accomplished by the paper and pencil technique using a questionnaire. The survey method is often used in health and psychology to measure people's attitudes, beliefs, opinions, or behaviors. Data obtained from surveys are used to infer information about the population from the sample. Generally, items used on such surveys are of an open or closed form. In the closed form, the subject chooses a set or fixed response. The most widely used closed scaled items consist of what is known as a Likert scale. Semantic Differential scales are also popular, as are scales which use a forced-choice response format (Dyer, 1995; McMillan, 1993).

With regard to the current study, attitude scales have been reviewed which relate to the variables in question: namely, instruments for measuring eating disorders, Instruments for measuring self-esteem, and instruments for measuring locus of control. Based on this

review, instruments were selected which met the requirements of the study and of the sample being investigated.

Instruments Used in Measuring Eating Disorders

Rating scales of anorexia and bulimia are used to establish diagnoses in epidemiological surveys, assess the severity of disturbance, and assess changes in behavior over time with treatment (Allison, 1995; Halmi, 1985). Many investigators have established their own eating disorder questionnaires for the purposes of surveying disturbed eating behaviors in a population or for assessing changes in behavior. There does not exist an eating disorder instrument with an acceptable level of diagnostic validity and therefore, diagnosis of anorexia nervosa and bulimia nervosa must be established by personal interview (Allison, 1995).

Although there exists numerous eating disorder scales, there are about five scales which have been used more frequently than the rest. Probably the most extensively used self-rating scale is the Eating Attitudes Test (EAT) developed by Garner and Garfinkel in 1979. The EAT comes in either a 26-item or 40-item version and is most effectively used as a measure of severity of anorectic symptoms and change in the symptoms over treatment and time (Beere, 1990). Items on the EAT have a 6-point Likert-like response format.

In 1983, the Eating Disorder Inventory (EDI) was developed by Garner to assess psychological characteristics relevant to anorexia nervosa and bulimia. It too, like the EAT, is a self-rating scale and has either a 64 or 91-item version. The EDI's items are also scaled on a 6-point Likert-like response format, but specific items comprise

numerous distinct sub-scales measuring constructs such as bulimia, drive for thinness, and body dissatisfaction.

Halmi, in 1981 developed the Binge Eating Questionnaire to help in ascertaining a DSM diagnosis of bulimia. This questionnaire contains a mixture of forced-choice (yes-no) items, and scaled items. A diagnosis of bulimia is made by a positive answer to all of the criteria questions for bulimia.

The Binge Scale Questionnaire was devised by Hawkins and Clement in 1980 to measure the severity of behavioral and attitudinal parameters of bulimia. This scale contains 9 items using a 4-point Likert-like response format.

Probably the oldest recognized scale to assess eating disorders is the Slade Anorexic Behavior Scale. Developed in 1973, researchers use it to assess the severity of anorectic behavior. It has been used primarily with anorectic patients and is more of an observation rating scale, in which the observer marks the presence or absence of typical behaviors.

Numerous other instruments exist to measure various aspects of eating disordered attitudes and behavior. The Eating Attitudes Test (EAT) and Eating Disorder Inventory (EDI) have also seen adequate use in research. A thorough description of the EAT (which was used in the current study) is presented in Chapter III.

Instruments Used in Measuring Self-Esteem

In reviewing the various self-esteem instruments, the most popular scale is the Rosenberg Self-Esteem Scale, accounting for 25 percent of the literature citations. The next most popular scales are the Coopersmith Self-Esteem Inventory, Tennessee Self-Concept Scale, Piers-Harris Self-Concept Scale, and the Barron Ego-Strength Scale.

Self-esteem scales often have been developed for a specific target population. Most scales were developed for use with adolescents and adults, and some have been developed for use with children. Few scale developers distinguish measures intended for adolescents from those intended for adults (Blascovich & Tomaka, 1991).

Rosenberg's Self-Esteem Scale (SES) contains 10 Likert-type items and is the standard by which developers of other measures usually seek convergence. Possible susceptibility to social desirability has not affected its use. It may be used for both adolescents and adults.

The Coopersmith Self-Esteem Inventory (SEI) originally was designed to be used with children but was modified for use with adults. It has a Likert-type response format that consists of 25 items. It may not assess self-regard in a unidimensional fashion, yet the overall scale correlates well with the major self-esteem scales.

In the original Janis-Field Feelings of Inadequacy Scale (FIS), self-esteem was assessed by using 23 negatively phrased Likert-like items. The FIS was revised in 1967 to 20 items of positive and negative nature in order to reduce the possibility of a response set. Since 1980, several revisions by Fleming & Watts (1980) and Fleming & Courtney (1984) have added additional items to the FIS in an attempt to measure self-esteem in a multidimensional fashion.

Helmreich and Stapp's (1974) Texas Social Behavior Inventory (TSBI) was developed to assess feelings of self-worth in terms of dominance, social competence, social confidence, and relations to authority figures. The original 32-item form has Likert-like response items and an equivalent 16-item form also exists. The TSBI measures social self-esteem, a component of global self-esteem.

Instruments Used in Measuring Locus of Control

Numerous locus of control measures have been used in research since the first scales were constructed in the 1950's. It was dissertation work by Phares and James in 1955-1957 that contributed to the development of the James-Phares Locus of Control Scale. The James-Phares instrument contains 30 Likert-scaled items with other 30 items to disguise the purpose of the scale.

Probably the best known locus of control instrument is the Rotter Internal-External Control Scale (Lefcourt, 1991). Rotter's I-E scale was developed in 1965 using much of the early James-Phares work. The Rotter scale contains 23 question pairs of internal/external statements and uses a forced-choice response format.

At about the same time that the Rotter I-E Scale was published, Crandall and Katkovsky (1965) introduced the Intellectual Achievement Responsibility (IAR) Questionnaire. The IAR scale is targeted exclusively on children's achievement behavior and their beliefs about responsibility for success and failure experiences.

It was Reid and Ware (1973) and Levenson (1973) who suggested that the locus of control construct was more multidimensional than Rotter had purported. Levenson's Internality, Powerful Others, and Chance Scales address separate independent components of the control construct, and contains Likert scaled items from the Rotter I-E Scale.

The Paulhus and Christie (1981) Spheres of Control Scale was developed to measure locus of control in non-social environments. In particular, they argue that control exists in three spheres (non-social, social, and political-social) and that individuals could have varying degrees of control within each sphere.

It was Nowicki and Strickland (1973) and Nowicki and Duke (1974) who introduced the adult (ANSIE) and children's (CNSIE) versions of Nowicki-Strickland Internal-External Control Scale, respectively. The 40-item scale uses a forced choice response format and can be used for study of developmental trends.

Research Related in Content and Methodology

Dichotomizing Samples Using Eating Disorder Instruments

One component of the methodology used in the current research involved using the Eating Attitudes Test-40 (EAT-40) to dichotomize the subjects into two separate groups: weight preoccupied (WP) and non-weight preoccupied (NWP). Several studies have used the EDI and EDI-2 to predict eating disorders and to identify weight preoccupied females in different populations. A study by Gross and Rosen (1988) used several self-report instruments and selected items from the EDI to identify weight preoccupied women in an infertility clinic (Allison, 1988) and in high school/college populations (Garner and Olmsted, 1984).

Few studies, however, have used the EDI to divide samples of individuals into dichotomous categories. Most of these studies have used the Drive For Thinness (DT) subscale of the EDI to identify weight preoccupied high school and college females, and compare their EDI subscale scores to subscale scores of clinical populations (Garner, Olmsted, Polivy and Garfinkel, 1984; Garner, 1991).

Of all of the reviewed studies, only one study was found which used the EDI to dichotomize a subclinical population for the purpose of comparing individuals across a psychological parameter. A study by Nassar, Hodges, and Ollendick (1992) did compare EDI subscales to variables on a self-concept instrument. However, in the Nassar study,

the EDI was not used to dichotomize and correlations were run for the entire sample. Another study by Duthey (1995) used the DT subscale of the EDI-2 to dichotomize the sample for comparison of self-concept in eating disordered and noneating disordered college females. In the present investigation, the variables of self-esteem and locus of control were compared for weight preoccupied and non-weight preoccupied females using the school groups of middle school, high school, and college.

Measuring Self-Esteem In Eating Disordered Individuals

Approximately half of the studies reviewed that measured self-esteem/self-concept in eating disordered females have employed the Rosenberg Self-Esteem Scale (SES). Many of these studies using the SES employed clinical samples or non-clinical samples of college females. Several studies using the Rosenberg scale also used other self-esteem scales to correlate with other variables (Bers & Quinlan, 1992), and to compare various types of eating disordered groups (Eldredge, 1993). The literature suggests that the SES has been the most frequently used inventory for determining self-esteem, especially with non-clinical eating disordered samples.

Other studies involving eating disorders have used the Coopersmith Self-Esteem Inventory, Osgood Semantic Differential, Piers-Harris Scale, Janis-Field Self-Esteem Scale, and the Tennessee Self-Concept Scale (TSCS) to measure self-esteem/self-concept. The TSCS has been the least used of all measures for assessing self-esteem/self-concept in eating disordered individuals, possibly due to its 100-item length. No studies were found that investigated eating disorders/self-esteem which compared self-esteem across age using any of the aforementioned self-esteem measures.

Cultural Expectations and the Self

Research has indicated that a preoccupation with being thin has become a national obsession, especially for women. It has also been shown that a poor self-concept, and its concomitant effects, is associated with this relationship (Leone, 1993; Mintz & Betz, 1988; Reynolds, 1985). According to Zerbe (1993), women with eating disorders have trouble regulating the self-esteem part of their self-concept. Women are "forced" to follow the male-influenced cultural prescription of how a woman "should act" and what she should "look like". The end result is a preoccupation with being thin, as women almost unconsciously and involuntarily follow the prescription in order to maintain their self-worth. Thus, self-esteem can become weakened if the woman fails to attain and/or maintain society's goals.

Matthews (1991) has suggested that poor self-esteem is a common characteristic often found in all three types of disordered eating groups. Although eating disorders themselves can serve to reduce one's self-esteem, it may be equally important to look at low self-esteem as being an antecedent to weight-loss and disordered eating (Grubb, 1993). Decrements in the self-esteem of females begin early in adolescence and often become more pronounced toward young adulthood. According to Baird & Sights (1986) and Wilson (1983), low self-esteem arises from an impairment in the development of personal autonomy. More specifically, the impairment involves difficulties in what Mahler (1972) refers to as "separation-individuation".

Body Image and the Self

A disturbance in body image has been implicated in the etiology and development of a variety of eating disturbances, especially anorexia and bulimia (Cook, 1993; Mintz, 1989;

Scarano, 1991). Strauman (1994) describes body image disturbance (BID) as a "syndrome of emotional, cognitive, perceptual and motivational phenomena which has two distinct but related aspects: body size overestimation and body dissatisfaction". Self-esteem is one of five main variables that can contribute towards this alteration and disturbance in body image (Cook, 1993; Gleghorn, 1989).

The link between body image disturbances and self-concept has been investigated extensively in clinical samples of eating disordered adolescents and young women (Baird, 1986). Sufficient studies have looked at the relationship between several psychological variables and their effect on eating attitudes in non-clinically diagnosed adolescent females (Early, 1993; Fisher, Schneider, Pegler & Napolitano, 1991) and in non-clinically diagnosed college females (Marino, 1989; Vann, 1987). Fewer studies, however, have focused on a single psychological factor such as self-esteem or self-concept, and investigated it as being a predictor of "non-differentiated" eating disorders in a non-clinical adolescent or undergraduate population.

Eating Disorder Continuum and the Self

Self-concept and self-esteem are important factors in the differentiation of females at various locations on the eating disorder continuum (Mintz, 1989; Mintz & Betz, 1988; Scarano & Kalodner-Martin, 1994). For university women in particular, it has been shown that self-esteem decreases as disordered eating increases (Mintz, 1989; Mintz & Betz, 1988). In the Mintz and Betz (1988) study, it was noted that Rosenberg Self-Esteem scores of college women differentiated between the types of disordered eaters on the continuum. Among all of the disordered eating groups investigated by Mintz and Betz (1988), it was the bulimics who had the lowest self-esteem scores. Despite the type

of disordered eating pattern, evidence has shown that poor self-concept is present in most all eating disordered individuals, regardless of where they might be on the continuum.

Locus of Control and Eating Disorder Tendencies

A number of studies have investigated the relationship between eating disorders and the psychological construct of locus of control. Fairly consistent findings have been found in eating disorder patients as discussed below.

An early study by Hood et al. (1982) investigated locus of control as a measure of ineffectiveness in anorexia nervosa patients. In their study, they used a modified version of the Internal-External Locus of Control Scale (e.g., Rotter, 1966) with a sample of clinical anorexic and control subjects from high school and college. Findings indicated that external locus of control orientation was not a global characteristic with anorexia nervosa. This study reported that externality was found to increase with age especially in older patients. Anorexic patients, in general, had greater external locus of control than did control subjects.

Others have investigated the relationship of locus of control in bulimic college students. McCanne (1985) sampled bulimics who were receiving clinical therapy, and used Rotter's I-E Scale to measure locus of control before the beginning of group therapy. Results indicated moderate differences between new bulimic patients, bulimics receiving therapy, and normal controls.

Investigations by Grace, Jacobson, and Fullager (1985) also support the notion that bulimics often have an external locus of control. Grace and her colleagues compared three types (purging bulimics, nonpurging bulimics, controls) of nonclinical female college students on several measures including the I-E Scale and Coppersmith's Self-

Esteem Inventory (1967). Data in the Grace et al. (1985) study revealed significant differences among the groups on the characteristic of locus of control, lending support to previous studies (e.g., Hood et al., 1982).

Samples of obese and normal weight female college students have been used to investigate the relationship between disordered eating and the locus of control construct (Davis, Wheeler, & Willy, 1987). In their study, it was found that percentage overweight correlated with locus of control, and that obese individuals were more external than normal weight controls.

With regard to eating disorders and control, there exists two experiences or processes which anorexics and bulimics share within and across their diagnostic boundaries. First, these individuals generally share a sense of being out of control of their lives (Garner, Olmsted, & Polivy, 1983). Second, they share a deficit, impairment, or disruption of self-regulation (Goodsitt, 1983). Eating disorders are characterized by a sense of undercontrol and frequently, some compensatory efforts at overcontrol. Compensatory overcontrol is particularly strong in restrictive anorexia, whereas bulimics tend to feel more completely out of control. Some tendency to oscillate between undercontrol and overcontrol, however, is shared by both populations (Boskind-White & White, 1983; Levitan, 1981).

The control issues and struggles of eating disordered individuals involve personal behavior, interpersonal relationships, and intrapsychic experience. Control issues reflect underdeveloped coping skills (e.g., lack of self-assertion) and sometimes underdeveloped psychic structures (e.g., identity). Thus, internal conflicts tend to be intense in both

anorexics and bulimics and interpersonal conflicts (e.g., feeling oppressed or victimized) are salient and often covert (Boskind-White & White, 1983; Bruch, 1978).

More recent research on eating disorders and locus of control (e.g., King, 1989; Swain, Shisslak, and Crago, 1991; Williams, Chamove, and Millar, 1990; Williams et al., 1993) supports the findings of the early studies by Davis et al. (1987), Grace et al. (1985), Hood et al. (1982), and McCanne (1985). Nearly all of these early and recent investigations provide some evidence that eating disordered people tend to be external in terms of self-efficacy, self-control, and the interpersonal world. Bulimics tend to be somewhat more consistently external than anorexics. A tendency to externality also seems to extend beyond full diagnostic syndromes to individuals with sub-diagnostic eating disorders, including chronic dieters and obese individuals.

The assessment of a personality/psychopathology variable construct such as locus of control in individuals with non-clinical eating disorders is especially important for several reasons. Although the case itself may not be clinical, the personality feature (e.g., control) may be relevant to the treatment and/or etiology of the eating-related behavior. In addition, the personality feature may develop or worsen as a consequence of experiencing eating-related disorders, and this feature itself could become a focus of intervention. Establishing relationships between locus of control, other related psychological constructs (e.g., self-esteem), and disordered eating will serve to justify the need for more emphasis to be placed on developing and incorporating training programs at the primary and secondary school level. Such programs could serve to reduce the incidence of clinical eating disorders by promoting positive self-esteem, positive body image, and by fostering a more internal locus of control.

Self-esteem has been investigated with eating disordered individuals without concurrently looking at locus of control. Crowther and Chernyk (1986) administered the Rosenberg Self-Esteem Scale to adolescent girls diagnosed as bulimic and to adolescent controls. Results indicated that the bulimics had significantly lower self-esteem than did normal controls.

Summary

This brief review of literature on the constructs of locus of control and self-esteem and their relationship to eating disorders can be summarized as follows. First, it seems clear that clinically diagnosed bulimics, anorexics, and obese individuals generally have a lower level of self-esteem than those not so diagnosed. Secondly, fairly strong positive relationships also exist between having an external locus of control and being clinically diagnosed with an eating disorder. The literature is scant, however, in comparing locus of control and self-esteem across age and in groups of subclinical individuals (i.e., white middle/high school females) where the potential for intervention exists. More research needs to be done with the larger non-clinical eating disordered female population to help clarify the relationship involving self-esteem, locus of control and self-esteem and locus of control concurrently. Female students from middle school, high school, and college are worthy of further study, as their respective developmental levels and respective environments provide somewhat different effects on self-esteem, locus of control, and eating attitudes/behaviors.

CHAPTER III

METHODOLOGY

The purpose of this study was to determine if there was a significant difference in self-esteem and locus of control in a non-randomly selected sample of weight preoccupied and non-weight preoccupied middle school, high school, and undergraduate college females. Undergraduate female college students enrolled in introductory psychology classes and adolescents females enrolled in grade 6-12 secondary schools were asked to respond to: 1) paired statements about self, the Rosenberg Self-Esteem Scale, 2) paired statements about internal and external reinforcement, the Children's Nowicki-Strickland Internal-External Locus of Control Scale, and to 3) behavioral and attitudinal statements included in the Eating Attitudes Test.

The procedures used in this study are described under the following sections: sample selection, protection of human subjects, instrumentation, procedures and methods, data collection, and data analysis.

Sample Selection

The adolescent sample consisted of age 11-18 female students attending grades 6-8 at Maryville Middle School and grades 9-12 at Maryville High School located in Blount County, Tennessee. Health and physical education classes in grades 6-9 were selected for the study, while the lack of regular health classes in grades 10-12 required surveys to be completed at home. A sample of convenience was used with the adolescent sample, as a random sample was not possible at the middle school or high school level. Parental consent was obtained in order for adolescent subjects to participate in the study and assent was given to all participants.

Undergraduate female subjects were recruited from General Psychology 110 classes, offered by the University of Tennessee Psychology Department during the Spring term, 2000. Extra credit was given to all female subjects to encourage participation and ensure obtaining an adequate sample size. For inclusion in the study, subjects were required to complete the informed consent form.

It was assumed that a random sample would be difficult to obtain at the college level, and therefore, a sample of convenience was used for this study. Justification for selection of females from introductory psychology classes was based on the assumption that the sample characteristics would be fairly representative of the total population of undergraduate females at the University of Tennessee, Knoxville. Additionally, it was assumed that the female sample from introductory psychology classes would also be somewhat representative of all eating disordered and non-eating disordered undergraduates on the campus.

Undergraduate introductory psychology courses have traditionally been used for attitudinal and behavioral research because of their ability to attract a generally representative sample of students. This study utilized General Psychology 110 classes because of their considerable size, and because it was assumed that the classes attracted a wide range of students from throughout the university. The choice of Psychology 110 classes over other upper level or graduate classes helped to assure that responses were more typical of the undergraduate population.

Protection of Human Subjects

This study adhered to the University of Tennessee, Knoxville Institutional Review Boards' policy involving the use of human subjects for non-invasive research. An

approved Form B (see Appendix A) was obtained before any research was undertaken. Completion of informed consent forms was required of all subjects participating in the study. Adolescent subjects were also required to have guardian/parental consent to participate. Written permission was also secured beforehand from the Psychology Department at University of Tennessee and secondary school officials to use their students in the study.

All female adolescent and undergraduate subjects participated in the study on a voluntary basis. The informed consent form explained that subjects were free to withdraw at any time. The form also included a statement of purpose of the study, a brief description of the procedure, the potential risks involved, a statement of confidentiality, and information about contacting the experimenter, if necessary. Potential benefits were also explained on the consent form. Two different informed consent forms were developed, with the more detailed form addressing the needs of secondary school administration.

At the middle school level (i.e., grades 6-8) and in grade 9 of the high school, a short debriefing period took place after completion of the study. In this debriefing period, questions were entertained and a discussion was held about the subject's experience with the research effort. School principals and the participating teachers were also briefed and available for questions. No debriefing was done in grades 10-12 because surveys were completed outside of school and returned to the high school. A debriefing was not done at the undergraduate level, although general results were provided to the University of Tennessee Psychology Department. Results from the study were offered to all

undergraduate subjects, parents of minors, and to school administrators upon written request.

Instrumentation

In a study of this nature involving the self-reporting of disordered eating attitudes/behaviors and feelings of low self-regard, it is vital to know that the self-reported attitudes/feelings/behaviors are valid and reliable. This section describes the three instruments which comprised the Health & Nutrition Survey (HNS) and were used in this investigation: namely, the Rosenberg Self-Esteem Scale, Children's Nowicki-Strickland Internal-External Control Scale, and the Eating Attitudes Test. Also described in this section, is the demographic questionnaire that was part of the HNS. The complete HNS can be found in the Appendix D.

Rosenberg's Self-Esteem Scale (SES)

The self-esteem rating scale utilized in the current study was the Rosenberg Self-Esteem Scale (1965). It was originally designed by Morris Rosenberg in 1962 to measure self-esteem of high school students. Since being introduced, the SES has been used with adolescents and adults who comprise various groups in both clinical and nonclinical settings (Alfonzo, 1995; Blascovich and Tomaka, 1991; Fischer & Corcoran, 1994). This scale is the most popular measure of global self-esteem and, not surprisingly, is the standard that is used in seeking convergence with self-esteem measures (Blascovich & Tomaka, 1991).

Rosenberg's self-report scale measures the unidimensional construct of self-esteem as compared to the multidimensional construct of self-concept (Rosenberg, 1979), and defines self-esteem as the favorable or unfavorable attitude toward oneself (Rosenberg,

1965). Although the 10-item Rosenberg Self-Esteem Scale (SES) is considered to be a Guttman-type scale, it employs a 4-point Likert-type response format in rating the items. Its ease of scoring, administration, and interpretation are facilitated by the small number of items it contains (Blascovich & Tomaka, 1991). Items on the SES require subjects to directly report their feelings about the self, with higher scores indicating higher self-esteem (Alfonzo, 1995; Fischer & Corcoran, 1994).

Instead of scoring the SES by Guttman fashion, it is commonly scored using the four point Likert-type scale where respondents rate items as either strongly agree, agree, disagree, or strongly disagree. The SES instrument is scored by simply totaling the items, after negatively worded items are reversed-scored, yielding scores ranging from 10-40 points (Fischer & Corcoran, 1994). Likert-style formats utilizing 5- or 7-point scales have been adopted by some authors on the SES, providing a broader range of scores.

Norms were established for the SES based on the original sample of approximately 5000 students with varying ethnic backgrounds from randomly selected New York state high schools. Over the years, subsequent research with college students and adults has also helped to establish norms for these groups (Alfonzo, 1995; Blascovich & Tomaka, 1991; Fischer & Corcoran, 1994,).

The reliability of the SES has been well documented by its author and numerous others. Excellent internal consistency has been suggested for the SES, with Chronbach alpha values ranging from .77-.88. Test-retest reliability coefficients ranging from

.73-.88 have also been reported for a variety of samples, again indicating excellent stability for this self-esteem instrument (Alfonzo, 1995; Blascovich & Tomaka, 1991; Fischer & Corcoran, 1994; Rosenberg, 1979).

Numerous studies involving the SES has demonstrated that it possesses validity of all types with regard to measurement of global self-esteem. Content validity has been established for the SES, as it possesses the capacity to measure the unidimensional factor it was intended to measure (Blascovich & Tomaka, 1991; Wylie, 1989). As reported by Wylie (1989), the SES also correlates well with other self-esteem measures, demonstrating its concurrent validity. Construct validity for the SES is also apparent, as the SES correlates in predicted directions with measures of anxiety and depression (Fischer & Corcoran, 1994). Finally, the SES has adequate face validity, in being appropriate for its purpose when viewed by nonpsychologists (Rosenberg, 1965; Rosenberg, 1979).

Although the Rosenberg SES provides a good estimate of feelings about the self, it has some minor weaknesses. Blascovich and Tomaka (1991) suggest that distributions of scale scores for college students are often skewed negatively producing "low self-esteem". It has also been suggested by Blascovich & Tomaka (1991) that subjects may respond in a socially desirable manner to items on the SES.

Nowicki-Strickland Internal-External Control Scale (NSIE)

The locus of control instrument used in this study was the Children's Nowicki-Strickland Internal-External Control Scale (CNSIE), and was developed by Nowicki and Strickland in 1973. The CNSIE Control Scale was constructed and developed within the theoretical framework of Social Learning Theory, as was Rotter's Internal-External

Locus of Control Scale. Lefcourt (1991) has stated that the CNSIE was designed to assess/measure generalized expectancies for internal/external control of reinforcement, and the CNSIE has similar aims and definitions as Rotter's I-E instrument.

In the current study, the CNSIE was adapted to incorporate a Likert scale. The original scaling for the CNSIE was a "yes-no" response format, but Likert scaling was recommended by Sherman and Hofmann (1988), based on the argument that it would provide a more detailed analysis. Use of Likert scaling required the CNSIE questions to be converted into statements. As with the Rosenberg SES used in this study, a four point scale was also included at the end of each internal/external control statement. Subjects could select an answer of strongly agree, agree, disagree, or strongly disagree.

The Likert-adapted CNSIE scale can still be conceived of as a "yes-no" questionnaire since the adaptation determines the degree of affirmation. The scoring in the original CNSIE ranged from a total score of 0 (internal) to a total score of 40 (external). External responses to a question in the original CNSIE were scored with a value of 1, while internal scores received a value of 0. In the Likert version of the CNSIE, scoring ranged from 1 (highly internal) to 4 (highly external). The corresponding total scores for the adapted CNSIE would range from 40 (highly internal) to 160 (highly external).

The original Children's Nowicki-Strickland I-E scale (CNSIE) is a 40-item questionnaire requiring a yes or no answer for each item. Format and language of the CNSIE is believed to be easier to understand than in Rotter's I-E Control Scale (Lefcourt, 1991; Nowicki &, Strickland, 1973). Reading comprehension of the CNSIE is reported to be appropriate for grades 3-12. Two short forms (18 items vs. 31 items) of the CNSIE are available, comprising a subset of the complete scale, and recommended by the test's

authors for use in grades 3-6 and grades 7-12, respectively (Nowicki & Duke, 1983). The children's version of the Nowicki-Strickland I-E scale also contains minor modifications such as tense of statements and word substitutions (i.e., using "children" in place of "people"). For the current study, the abbreviated CNSIE (i.e., 31 of the original 40 items) was used as it was deemed appropriate for use with the range of grades that were surveyed (S. Nowicki, Personal Communication, February 28, 2000). An extensive review of studies reporting validity and reliability of the CNSIE and its short forms can be found in Nowicki and Duke (1983).

According to Lefcourt (1991), one of the advantages of using the CNSIE over other locus of control measures is that the CNSIE was created based upon the subject pool being assessed. The original sample of 152 children in grades 3-9 was used to evaluate the psychometric properties of the NSIE, while further statistics were obtained from nearly 800 subjects in a dozen separate studies. The CNSIE, in particular, used a primarily Caucasian sample of 1017 children in grades 3-12 who resided in four different communities. Effectiveness of the CNSIE has also been demonstrated in the college environment (Lefcourt, 1991; Nowicki & Duke, 1983).

Internal consistency reliability for the CNSIE has been adequately reported by Nowicki & Duke (1983). The estimates of internal consistency for the CNSIE Control Scale were done using the split-half method. Reliability coefficients for the CNSIE and its short forms were considered satisfactory by Nowicki and Strickland (1973) and presented based on four grade groupings: (grades 3-5, $\underline{r} = .63$), (grades 6-8, $\underline{r} = .68$), (grades 9-11, $\underline{r} = .74$), and (grade 12, $\underline{r} = .81$). Test-retest reliability data for the CNSIE have varied from .52 for a 12-month interval in grades 3-12 children (Prat, Griscom, &

Parish, 1979) and .63 for a 9-month interval in grades 3-6 children (Nowicki & Duke, 1983), to .76 for a 5-week period in grade 12 adolescents (Nowicki & Roundtree, 1971).

Both convergent and discriminant validity have been established with the CNSIE and extensively reported by Nowicki and Duke (1983). Convergent validity has been evaluated through comparisons with other locus of control measures (i.e., Rotter's I-E Scale, Bialer-Comwell Scale, Levenson's Scale, Intellectual Achievement Responsibility Questionnaire), with moderate to significant correlations found ranging from .41 to .68 (Nowicki & Duke, 1983; Nowicki & Strickland, 1973).

Discriminant validity for the CNSIE, as presented in Nowicki and Duke (1983) and Nowicki and Strickland (1973), appears to be adequate. Non-significant correlations have been found when relating the CNSIE to IQ scores from the WISC, and to scores on other measures such as the Crowne-Marlowe Scale and the Children's Social Desirability Scale.

Eating Attitudes Test-40 (EAT-40)

In the current study, the eating disorder rating scale employed was the original 40-item Eating Attitudes Test (EAT-40). A shorter version of the Eating Attitudes Test, EAT-26, has recently been used as a major component of the National Eating Disorder Screening Program and can serve as an effective measure of weight preoccupation. However, as recommended by the test's author (D. M. Garner, Personal Communication, February 18, 2000), the 40-item version of the EAT was used in this study to provide a wider range of possible scores.

Garner's EAT (Garner & Garfinkel, 1979) was one of the first objective self-report tests for measuring eating disorder symptoms. Both the 26-item and 40-item versions

have the same Likert scaling and yield a total score to identify a wide range of eating disordered attitudes and behaviors. Both versions of the EAT also yield cutoff scores, which theoretically, would identify individuals who are considered to be weight preoccupied. Reading level for the EAT is reported by Garner & Garfinkel (1979) to be fifth grade, and its use is appropriate for grade school and older subjects. Beere (1990) summarized the wide variety of subjects that the EAT has been used on, including adolescents and adults in both clinical and non-clinical settings.

Likert scaling for the EAT employs a 6-point format from which answers are selected (i.e., 1= never, 6= always). Most of the items are positively scored with a response of "always" receiving a score of 3, while reverse-scored items receive a score of 3 for a response of "never" (Garner & Garfinkel, 1979; Halmi, 1985). Although the scaling is referred to as a "6-point scale", only the three responses in "anorexic" direction are assigned point values of 3, 2, and 1, while remaining responses receive point values of zero. Scores on 40-item version of the Eating Attitudes Test range from 0 (low weight preoccupation) to 120 (high weight preoccupation).

The EAT does not diagnose specific eating disorders, but serves as an adjunct to clinical diagnosis and as a screening instrument (Halmi, 1985), with high scores indicative of eating disordered symptoms. Norms for the EAT-40 for normal female control subjects have been established with a mean total score of 15.6, compared with scores of 58.9 and 41.3 for anorexics and bulimics, respectively. Garner and Garfinkel (1979) have recommended that a cutoff score of 30 on the EAT-40 be used to identify disordered eating attitudes and behaviors (i.e., weight preoccupation). The cutoff score

of 30 was based on wide range of scores of 32-86 obtained in anorexia nervosa subjects in the 1979 study.

It the current study, it was also suggested by the EAT's author, David Garner (Personal Communication, February 18, 2000) to use the recommended cutoff score of 30. Ideally, it would have been beneficial to look at the upper and lower 20th percentiles of EAT scores to compare group differences. It was anticipated, however, that sample size in the weight preoccupied group might be too small to facilitate statistical analysis if using percentiles or a higher cutoff score. Similar experience in using cutoff scores (Duthey, 1995) also reveals that very few subjects comprise the disordered eating group, and very large samples would be required for computing group differences across variables.

Reliability data on the EAT have been presented by a number of researchers. Garner and Garfinkel (1979) reported alpha reliability coefficients in anorexic subjects (0.79) and in pooled samples of anorexic/normal controls (0.94). In looking at internal consistency, all items on the EAT have been found to be moderately correlated ($r>.44$) with the total EAT score. When the items on EAT-40 were factor analyzed, three of the seven EAT factors (i.e., food preoccupation, dieting, and oral control) accounted for 40% of the variance in a sample of anorexia nervosa patients (Garner, Olmsted, Bohr, & Garfinkel, 1982). Test-retest reliability for the EAT has been noted by Carter and Moss (1984), with a coefficient of .84 reported for a sample of 56 subjects over a 2-3 week interval.

Numerous studies have reported validity data for the EAT. Discriminant validity was investigated by Garner et al. (1982) and non-significant correlations were obtained when

EAT scores were correlated with measures of obsessionality, anxiety, and interpersonal sensitivity. Non-significant correlations were also noted by Gross, Rosen, Leitenberg, and Willmuth (1986) when the total EAT score was correlated with several subscales (i.e., maturity fears, ineffectiveness, and interpersonal distrust) of the Eating Disorder Inventory. The Gross et al. study (1986) also revealed numerous non-significant correlations when the three main EAT factors were correlated with eight subscales of the EDI.

Predictive validity of the EAT has been noted by Garner and Garfinkel (1979) with changes in symptomatology reflected in lower EAT scores for recovered anorexics. Another study with bulimics receiving cognitive-behavioral therapy found that therapeutic changes were reflected by lower scores on the EAT (Williamson, et. al., 1989).

A number of studies have noted adequate concurrent validity for the EAT. Unpublished data from subclinical and clinical subjects found a coefficient of $\underline{r} = .67$ when the EAT was correlated with the Bulimia Test (Smith & Thelen, 1984). The Gross et al. (1986) study compared the EAT to three other disordered eating scales and noted moderate positive correlations. Other correlation coefficients of $\underline{r} = .70$ and $\underline{r} = .64$ were found when the EAT was correlated with the Bulimic Investigatory Test (Henderson & Freeman, 1987) and Anorectic Cognitions Questionnaire (Mizes, 1988), respectively. Several studies have also shown the EAT to be effective in differentiating between anorexia nervosa, bulimia nervosa, and nonclinical controls (Garner & Garfinkel, 1979; Gross et al., 1986; Williamson, Cubic, & Gleaves, 1993).

Demographic Questionnaire

This research study used a demographic questionnaire that was placed on page one of the five-page Health & Nutrition Survey. The demographic page was followed by the four pages which comprised the three aforementioned Likert-scaled instruments. The demographic questionnaire contained general information such as gender, age, ethnicity, and grade in school. This demographic questionnaire was necessary for providing descriptive statistics, and for help with grouping individuals for other statistical analyses. The remaining items (e.g., present weight, present height, ideal weight, highest past weight) on the demographic questionnaire were included and used as part of the supplementary data analysis presented in Chapter VI.

Permission to Use Instruments

All three instruments (e.g., EAT-40, CNSIE, SES) employed in the current study were used with permission granted beforehand. It was explained to each test author that the three instruments would collectively comprise what would be referred to as the "Health & Nutrition Survey". It was further explained that the HNS instrument would be solely used for data collection toward completion of this research study.

Phone communication was established with the authors of the CNSIE Control Scale and EAT with later written permission granted for use of the EAT instrument by David Garner (Personal Communication, February 18, 2000). Verbal permission to use the CNSIE was obtained after discussing the survey research endeavor by phone with the test author, Steven Nowicki (Personal Communication, February 28, 2000). Formal permission to use the Rosenberg SES was not needed as the instrument is openly available and in the public domain. It has been the desire of the author's widow that the

SES be used for professional and educational research (Personal Communication, February, 18, 2000).

Procedure and Design

Secondary School/University Permission

Permission was granted for the administration of the Health & Nutrition Survey from the University of Tennessee Human Subjects Committee, University of Tennessee Psychology Department, and the secondary school district involved in this study. Full cooperation was given to the secondary schools in providing any information which would assist teachers and administrators in making an affirmative decision about participating in this research project.

The process of securing secondary school permission was lengthy and began one semester prior to data collection. The first step involved meeting the health teachers at the middle and high school to enlist their support of the research project. The teachers provided insight as to proper survey administration and how classes were structured. After several visits to the middle school and high school, it was recommended by the cooperating health teachers to meet with the principals of the middle/high schools, and the superintendent of the school system. It was the superintendent of schools who granted final permission to use health classes for surveying the middle school students. At the request of the high school principal, surveys were allowed to be administered in 9th grade health classes, whereas surveys would be sent home with females in grades 10-12. Although a lower response rate was expected for surveys that were sent home, it still allowed for a cross-sectional sample to be obtained. The high school principal could not justify using non-health class time to gather health-related data in grades 10-12.

As was mentioned, the superintendent of schools had the final decision with regard to data collection at the middle school, although the middle school principal made the decision as to when the data was collected. Permission to administer the survey within the school was granted based on the age of subjects surveyed and presence of existing health classes.

Interestingly, the process of obtaining written permission at the secondary school level involved 3-4 months of visits and negotiating. Copies of the informed consent form, assent form, and Health & Nutrition Survey were supplied to both principals and the superintendent. All of the expressed concerns about the study were addressed in both personal meetings and in lengthy written correspondence with the teachers and school officials. Changes were made to the informed consent form, assent form, and Health & Nutrition Survey based on needs and comments expressed by school officials.

Letters of consent were provided by each principal and superintendent of schools as evidence of agreement for the study to proceed. At each grade level in grades 6-9, teachers also had to grant verbal approval before their classes could be used for the administration of the questionnaire. Obtaining permission of grade 6-9 health teachers was done by an in-person meeting so that the study could be fully described and consent forms sent home with students.

Undergraduate participants were recruited from Psychology 110 classes by securing permission beforehand from the Psychology Department at the University of Tennessee. A one-page description of the study was submitted along with an approved Human Subjects Form B and informed consent to Dr. Richard Saudargas, per Psychology Department guidelines. Males and females were allowed to participate in the study,

although only data from the female volunteers was used in the statistical analysis. All undergraduate subjects received course extra credit for their participation.

Adolescent/College Student Consent Forms

Once the secondary school approval was granted and the testing dates secured, an informed consent form and assent form was sent home with male and female students by their health teachers. The forms in grade 6-9 were sent home about 7-10 days before the anticipated data collection and encouraged to be returned by a certain date. Having consent forms returned would allow for certainty of permission when distributing the surveys in the classroom.

In grades 10-12, the consent form, assent form, and the actual survey were given in packet form to interested male and female students by their 4th period teacher. The teacher read a description of the study before dispersing the survey packet to interested females. The principal also assisted in making an announcement on school PA system, helping to solicit involvement of grade 10-12 students. Informed consent forms and completed surveys were returned to the school office and placed in separate, locked drop-boxes. All completed surveys and signed informed consent forms were retrieved from the school office on the last official day of the school year.

Students in grades 6-9 were only allowed to participate in the study if the informed consent form was returned to the health teacher. The high school office personnel verified that a signed informed consent form was turned in when students in grades 10-12 returned their completed surveys. It was expected that some students in all grades would not participate because lack of interest, lack of parental consent, or for other unknown

reasons. Additionally, it was expected that the response rate in grades 10-12 would be lower primarily because surveys were not administered within the school classroom.

The informed consent forms used for college females were administered at the time of data collection. Each college volunteer was asked to read and sign the informed consent form before being given the survey. All questions were answered before volunteers signed the informed consent forms. No one was allowed to participate without reading and signing an informed consent form,

Data Collection in Secondary Schools/College

Communication was maintained with participating teachers in grades 6-9 during the time period that consent forms were being returned by students. After a majority of consent forms had been collected, each participating teacher was contacted by phone. The purpose of this conversation was to confirm the date for collection of the data. It was agreed to use only one class period to gather data. Teachers were allowed to choose the specific class session (i.e., date and time) for testing which would be least disruptive to their teaching. The principal at the middle school and high school made the final determination as to when data were collected.

The importance of using a controlled school room environment for responding to the questionnaires was emphasized in grades 6-9, rather than allowing students to take them home. This allowed for control over variables such as varied distractions possible in different home environments, or parents influencing their child's responses. Using class time to gather data allowed for the teacher to be present to assist with answering questions, and in helping to maintain class order during the testing.

Before the in-school data collection occurred in grades 6-9, students were provided an assent form to keep. The assent form was read to all participating students. Students who desired not to participate or lacked parental/guardian permission, either remained in the classroom or were placed in an appropriately supervised school room by the health instructor. All surveys were administered and collected within the classroom in grades 6-9.

The Health & Nutrition Survey was administered to undergraduate students under slightly different conditions. The survey was advertised by posting a description of the study and sign-up sheets (see Appendix E) on the Extra Credit Research bulletin board located on the 3rd floor in the Austin Peay Psychology Building. Undergraduate university students signed up for one of a number of available testing dates and times.

A university testing schedule was developed which consisted of a variety of campus locations and times in attempt to accommodate all individuals who were interested in participating. All testing dates, times, and locations were selected based upon availability and room capacity to accommodate at least 30 subjects. Permission was obtained beforehand to use university classrooms in various buildings by reservation through the University of Tennessee Registration Services Office.

The actual administration of the survey in the university testing environment was very similar to the protocol used in the grade 6-9 secondary school setting. During data collection, any questions or concerns by participants were addressed at the time posed. Testing sites were controlled to only allow room entry to those who were volunteering for the survey. Limiting the entry prevented friends or other significant others from disrupting volunteers during testing. The assent script was read and other directions were

given after all participants were present at the testing site. Subjects were then distributed an informed consent form which they were asked to read and sign. After all informed consents were collected, the survey was distributed. Volunteers returned their completed surveys and signed the extra credit vouchers were given to participants. Copies of the voucher slips were given to each participant and original vouchers forwarded to Sandy Anderson in the Department of Psychology.

Sampling Method

Selection of the sample for this study was originally to be done by cluster sampling, as numerous schools in Knox County, Tennessee were desired to be used. However, the complexity of this task and difficulty in obtaining permission from numerous schools, provided rationale for utilization of a single school system in Blount County, Tennessee.

The sampling method used in this study was non-random, non-probabilistic sampling and could be referred to as volunteer/opportunity sampling. Volunteers at the university setting served as a sample of convenience for this study which was open to students of both genders. Psychology 110 students volunteered to take part in this investigation and received extra credit for fully completed surveys. College students were recruited by verbal announcement during class by their Psychology 110 graduate teaching assistants. Adolescents were sampled based on those who were available/interested from grades 6-12 in the middle high schools. In a sense then, subjects were self-selected in the college environment and motivated by extra credit opportunity, while secondary school females were asked if they wanted to participate. It was hoped that the convenience sampling used in the secondary school and college populations would provide for an adequate cross-sectional sample to be used in comparing the three school groups.

Determination of Sample Size

Because of the number of variables in this study, there was a need to obtain a large enough sample size in order to perform relevant statistical analyses. Based on a similar study by Duthey (1995), it was expected that 25 percent of the females at each grade would be classified as eating disordered/weight preoccupied. Therefore, approximately 100 female students would need to be sampled at each grade level to obtain sufficient subjects to perform statistical analyses on the weight preoccupied and non-weight preoccupied groups. In anticipating the variability in response return rate, it was realized that an alternative was necessary if enough subjects were not obtained at each grade level. It was near the end of the secondary school data collection that return rate in each grade was low enough, and the decision was made to change the methodology and compare three school groups instead of the original grade by grade comparison.

Data Collection Protocol

Upon meeting the undergraduates at the scheduled testing site or the adolescent students in their schools, the survey was introduced as a "health and nutrition study". Undergraduates and the public school subjects in grades 6-9 were advised verbally that they also could withdraw from the study at any time. Students in grades 10-12 received an assent form and informed consent, which stated they were also free to withdraw from the study.

It was explained to all the college and secondary school students that testing would require the anonymous completion of a demographic form and three self-report inventories (EAT-40, SES, CNSIE), and it would take approximately 30-50 minutes of their time. In order to minimize response bias, none of the self-report scales were

identified in the Health & Nutrition Survey or discussed in any way. Participants were instructed to read the directions on each page of the survey before answering the items. All adolescent subjects were especially encouraged to obtain consultation during completion of the survey if they were confused about directions or items on the inventories. It was also underscored to all subjects that all three inventories needed to be fully completed before leaving the room. Confidentiality of the results was emphasized in forms sent home in grades 10-12, and in-person before distributing the questionnaires at college setting and in grades 6-9.

The five-page Health and Nutrition Survey was distributed to each of the college and secondary school students who volunteered to participate in the study. Volunteers were instructed to use #2 pencils and to respond all of the statements on the questionnaire. All responses were recorded on the questionnaire and any changes in response were asked to be clearly identified. The order of instruments in the packet was the same for all subjects (EAT-40, SES, CNSIE), with the demographic questionnaire was stapled at the front of the survey. After each data collection effort, the questionnaires were coded with a letter and a number to aid in data entry and analysis. All completed surveys were hand scored and entered into the EXCEL computer program.

Data Tabulation

In order to interpret the data, the use of SPSS procedures were employed. Data from all three self-report questionnaires were considered to be interval level data. Descriptive statistics of means and standard deviations were calculated on the SES, and CNSIE for each of the three school group samples (see Table 1 and Table 2, Chapter IV). Demographic information was tabulated and included as well. Only the data from female

respondents was analyzed in keeping with the purposes of this study outlined previously in Chapter I.

The information from the EAT-40 (i.e., total score) was used primarily to dichotomize the female sample into two distinct groups, namely, weight preoccupied and non-weight preoccupied subjects. Dichotomous groups were obtained for the college sample and for middle school and high school groups using 30 as the cutoff score. Other factor and subscale information from the EAT-40 was retained for future use and not used in this study.

The decision to run parametric tests in this study was based on having interval data and in satisfying the assumptions of normality and homogeneity of variance. To determine the degree of normality that existed in the data obtained, the Kolmogorov-Smirnov Test of Normality was employed. Levene's Test of Equality of Error Variances was performed to check for the presence of homogeneity of variance. It then was determined that the three main assumptions for using parametric statistical procedures were satisfied. Therefore, the four null hypotheses were tested using Pearson Product Moment correlations and Analyses of Variance as outlined below.

Analysis of variance (ANOVA) procedures were employed to the first null hypothesis to see if the self-esteem of weight preoccupied and non-weight preoccupied females significantly differed in middle school, high school, and college groups. Another ANOVA was performed to the second null hypothesis for significant group differences in locus of control. Tukey's Honestly Significant Difference (HSD) test was used to make post-hoc comparisons of the means if an overall significant F ratio was obtained, and used to determine where the differences existed.

Pearson Product Moment correlations were performed to test null hypothesis number three for the presence of relationships involving self-esteem and weight preoccupation in groups of middle school, high school, and college females. Correlational coefficients were also performed to test null hypothesis number four for the presence of relationships involving locus of control and weight preoccupation in groups of middle school, high school, and college females.

CHAPTER IV

ANALYSIS OF THE DATA

Introduction

This chapter presents the findings from the analysis of the collected data. These data were obtained as a result of administering four paper and pencil instruments packaged as the Health and Nutrition Survey. A demographic questionnaire, the Rosenberg Self-Esteem Scale, the Children's Nowicki-Strickland Locus of Control Scale, and the Eating Attitudes Test-40, were completed by 194 female students (middle school, N=98, high school, N=96) attending Maryville, Tennessee public schools and 184 female undergraduates enrolled at the University of Tennessee, during the Spring Semester 2000.

Separate sections in this chapter discuss the characteristics of the participants including a breakdown by gender, ethnicity, grade, school group, and by weight preoccupation status. Other sections in this chapter address scale reliabilities, preliminary analyses, group statistics, analysis of variance, and correlational analysis.

Participant's Characteristics

Gender

Although the data collection phase of this study was open to males and females, data analysis was limited to the use of responses from the female participants as was earlier delimited. Responses from the male participants were saved for future analysis, while 378 usable female surveys were analyzed in the current investigation. Three hundred and seventy-eight or 99 percent of the 379 participants were in the age range 11-24. One college participant of age 34 did not meet the age requirements and was not included in the data analysis.

Ethnic Breakdown

An analysis of the sample of 378 females found that 81.0% of the respondents were of Caucasian ethnicity. Interestingly, most of the remaining ethnic groups that comprised the remaining female sample were fairly equal in terms of percentage. African Americans accounted for 3.20 percent closely followed by Native Americans (2.90%), Asians (2.40%), and Hispanics (1.30%). The second most common ethnicity category in this study was the group labeled as "Other". Thirty of the thirty-five females in the "Other" category considered themselves to be "mixed" with Caucasian/African American ethnicities, and the remaining five females described themselves as a mix of Caucasian and Native American ethnicities.

Grade/Age Distribution

This study utilized three school groups (i.e., grades 6-8, grades 9-12, and grades 13-16) to analyze relationships and differences involving the variables of self-esteem and locus of control. However, complete descriptive statistics were also done in terms of mean age and number of participants at each grade level. The mean age increased at every grade level. The largest age group was grade 13 (college freshmen) accounting for 128 of the total participants. Grades 7 and 9 were the next largest grades with 48 and 46 respondents, respectively. All of the remaining grades had at least 20 subjects, except for grades 12 and 16 (college seniors) which had the fewest respondents.

Distribution by School Group

A cross-sectional distribution of the total female sample was analyzed in this study and was represented using middle school, high school, and college classifications. The largest number of participants was at the college level, accounting for 48.68% of the 378

respondents. College respondents were freshmen through senior, age 24 or below. In the middle school 25.93% of the female respondents were in grades 6-8. A nearly identical amount of females came from the high school population where 25.39% of the entire sample was made up of females in grades 9-12.

Distribution on the Independent Variable

The total number of participants in this study was 378. Breakdown by school group found 98 female respondents from the middle school, 96 females from the high school, and 184 college females. Surprisingly, no incomplete or missing data was found on any of the surveys, and no data were removed from the study. A working total of 378 participants were used in statistical analysis of the data.

Using the recommended cutoff of 30 and above on the EAT, the distribution by dichotomous category (i.e., weight preoccupation) was calculated. The 378 participants were distributed across the dichotomous categories of weight preoccupation for the entire sample and by school group level. Nearly 84% of the entire sample was classified at non-weight preoccupied and 16.10% of the females met the operational definition of being weight preoccupied.

Within the school groups, the highest percentage of weight preoccupation was found to be 22.9 percent for high school females. Middle school females had the lowest weight preoccupation of 10.2 percent, while college females were weight preoccupied in 15.8 percent of the cases.

Although no hypothesis addressed proportions of weight preoccupied females in the three school groups, a chi square was performed to test for differences between groups in weight preoccupation. The chi square did not indicate significant differences between

the three school groups in the proportion of females who were weight preoccupied (χ^2[df = 2, N = 378] = 5.83, p = .054). Although the p-value of .054 was not statistically significant, it did indicate that there may be more high school females who were weight preoccupied. It could also be said that there may be relatively fewer weight preoccupied females in middle school, with weight preoccupation increasing in high school and then dropping again in college.

Scale Reliabilities

To establish internal consistency for the three scales used in this study, Cronbach's alpha was computed for the EAT, SES, and CNSIE. An alpha level of 0.60 of minimum acceptability for experimental research has been suggested for use by some authors (Salvia & Ysseldyke, 1988). Others such as Cohen (1997) have argued for more stringent values with a preference for an alpha of 0.80 or greater and justification of scale reliability if values are above 0.70.

Alphas computed for the entire sample of 378 female participants were 0.88 for the Rosenberg Self-Esteem Scale (N=10 items), 0.74 for the Children's Nowicki-Strickland Locus of Control Scale (N=21 items), and 0.90 for Garner's Eating Attitudes Test (N=40 items).

Reliabilities for each scale were also computed with separate breakdowns using the three school groups (i.e., middle school, high school, and college). Alpha values for the locus of control scale (CNSIE) were 0.76 for middle school, 0.75 for high school, and 0.74 for the college group. Reliability breakdown by group for the self-esteem scale produced alphas of 0.83 for middle school, 0.89 for high school, and 0.88 in the college group. The EAT reliability was also broken down by school group and alpha values of

0.85, 0.92, and 0.91 found for middle school, high school, and college samples, respectively. Given that all three scales exceeded the minimum adopted 0.60 reliability standard overall and by school group, consideration was given to continue with statistical analysis of the data.

Preliminary Analyses

In order to justify proceeding with more involved statistical analysis, the data was tested in terms of meeting the assumptions of homogeneity of variance and normal distribution. This study employed the Kolmogorov-Smirnov (K-S) Test to determine normality of the data. Histograms also helped determine if the data was normally distributed. Levene's Test was used to test if the error variance was equal across the groups.

Normality of Data

Normality was assessed for the CNSIE, RSES, and EAT-40 instruments. In reviewing the tests of normality and the histograms for the CNSIE and RSES, there were no strong violations of the assumption of normality. Only very slight violations were noted and it was assumed that the K-S Test was robust enough to handle slight departures from normality. Histograms for the CNSIE and RSES were symmetrical and the means appeared to be a good representation of the center of the data. The K-S Test and histogram for the EAT indicated that the data was less normally distributed than the data from the CNSIE and RSES. To normalize the EAT data, the decision was made to utilize the log transformation of EAT. Visual presentation of the LogEAT data produced a symmetrical presentation and the center approximating the mean of zero.

Homogeneity of Variance

Levene's Test was performed to assess equal variances of the overall data and by using both weight preoccupation status and school group classification. Although the overall variances were not equal, they were fairly close together for the two variables of self-esteem and locus of control. Equal variance was not analyzed for the EAT (i.e., LogEAT) variable because this study did not test for group differences with the EAT per se. This study utilized six analyses to assess self-esteem and locus of control. In looking at the p-values of all six analyses, none of the p-values for any groups were more than double of the other, and were less than the recommended 2:1 ratio. It was argued that some of the departure from the desired equal variance was due to the number of groups and small sample size in some groups.

Although Levene's Test and the Kolmogorov-Smirnov Test were significant, looking at graphical representation of the data and standard deviations, it was determined that the deviations were not gross violations of the assumptions of normality and equal variance. Therefore, the decision was made to continue and employ further statistical testing of the data.

Group Statistics

Mean scores and standard deviations were computed for the two dependent variables of self-esteem and locus of control in the dichotomized weight preoccupied groups (i.e., WP and NWP). These same statistics were also computed separately for the middle school, high school, and college samples.

Self-Esteem Means and Standard Deviations

Figure 1 provides a graphical representation of the mean scores from the 10-item Rosenberg Self-Esteem Scale (RSES) for all three school groups in both the weight preoccupied (WP) and non-weight preoccupied (NWP) categories. Table 1 provides a complete breakdown of the means and standard deviations relating to self-esteem. Females who were classified as non-weight preoccupied were found to have basically constant self-esteem scores for each of the school group levels. The WP females in all three school groups had lower self-esteem scores than did the NWP females. Mean differences between the groups in self-esteem were nearly the same in the middle school (.31) and in college females (.32), with a much larger mean difference (.93) found in high school females.

Three independent sample t-tests (see Appendix G-1) were used in testing for differences in mean self-esteem within each of the three school groups based on weight preoccupation status (i.e., WP, NWP). In performing these three t-tests, it was pointed out that there would be an increase in Type I error, and therefore the possibility of finding differences in self-esteem that were not actually present. To control for Type I error, the Bonferoni adjustment was employed. Instead of using the predetermined alpha ($p < .05$) for each t-test, the 5 percent error was spread out over all three t-tests as recommended by Huck and Cormier (1996). In using the adjusted alpha of $p = .017$, it was noted that self-esteem within the middle school was not significantly different, $t(96) = 2.23$, $p = .028$, when comparing WP and NWP females. However, t-tests for the high school group, $t(94) = 9.16$, $p < .001$, and college group, $t(182) = 3.25$, $p = .001$, were significant and

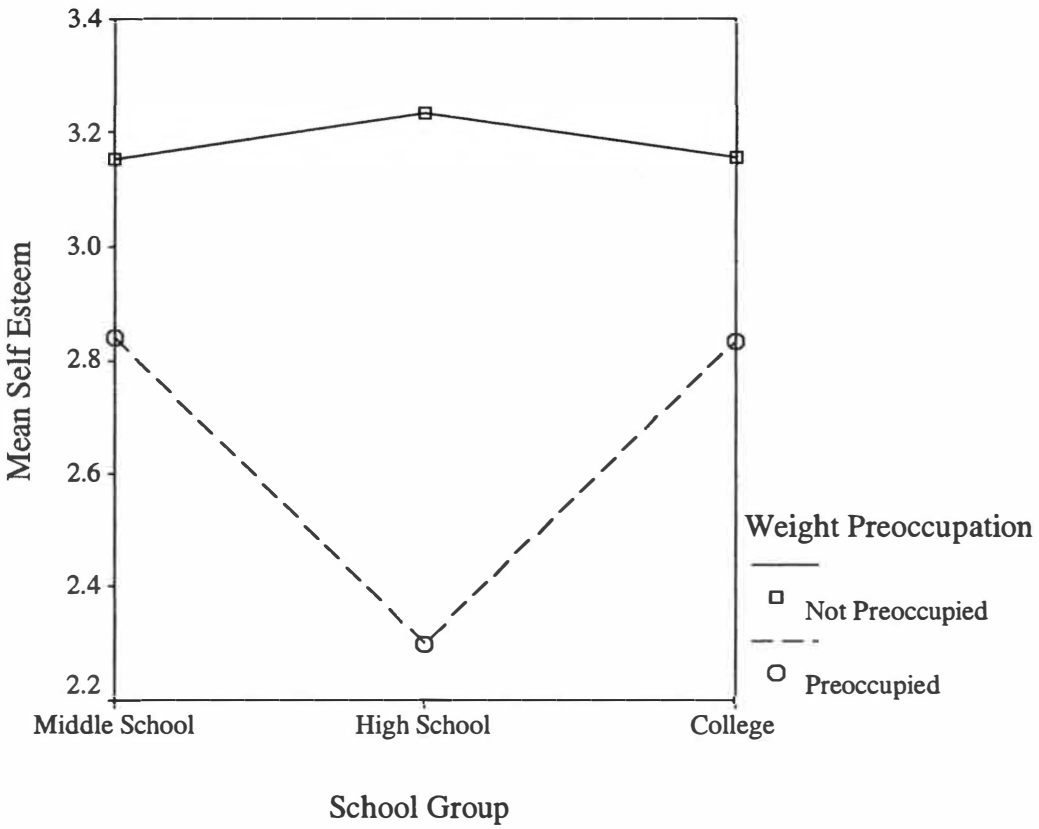


Figure 1. Graph of mean self-esteem scores for weight preoccupied and non-weight preoccupied females for middle school, high school, and college groups.

Table 1

Descriptive Statistics for Self-Esteem of Weight Preoccupied and Non-Weight Preoccupied Females

School Group	Weight Preoccupation	N	Mean	SD
Middle School	Not Preoccupied	88	3.155	.427
	Preoccupied	10	2.840	.381
High School	Not preoccupied	74	3.232	.422
	Preoccupied	22	2.300	.409
College	Not Preoccupied	155	3.156	.498
	Preoccupied	29	2.835	.443

indicated differences in self-esteem between those who were WP and NWP. The results from these three t-tests suggest that there appears to be lower self-esteem levels in weight preoccupied females at the high school and college level than for non-weight preoccupied.

Locus of Control Means and Standard Deviations

The variable of locus of control has been graphically presented in Figure 2. Mean scores from the 21-item Children's Nowicki-Strickland Internal-External (CNSIE) Locus of Control Scale were found to be generally higher (i.e., more external) for the weight preoccupied group. A complete breakdown of means and standard deviations relating to locus of control has been included in Table 2. Recalling that higher scores on the CNSIE represent an external locus of control orientation, it was found that the weight preoccupied group generally had higher scores than the non-weight preoccupied group. Females in each school group who were classified as non-weight preoccupied were found to have basically similar locus of control scores. When considering the weight preoccupied group, the middle school and high school groups had increased CNSIE scores as compared to the NWP group. However, the mean differences between the groups in locus of control in the middle school (-.067) and college (.008) appeared to be smaller as compared to the mean difference found in the high school (-.292).

Three independent sample t-tests (see Appendix G-2) were used in testing for differences in mean locus of control scores within each of the three school groups based on weight preoccupation status (i.e., WP, NWP). To control for Type I error, again the Bonferoni adjustment was employed and an adjusted alpha of $p = .017$ used for the three

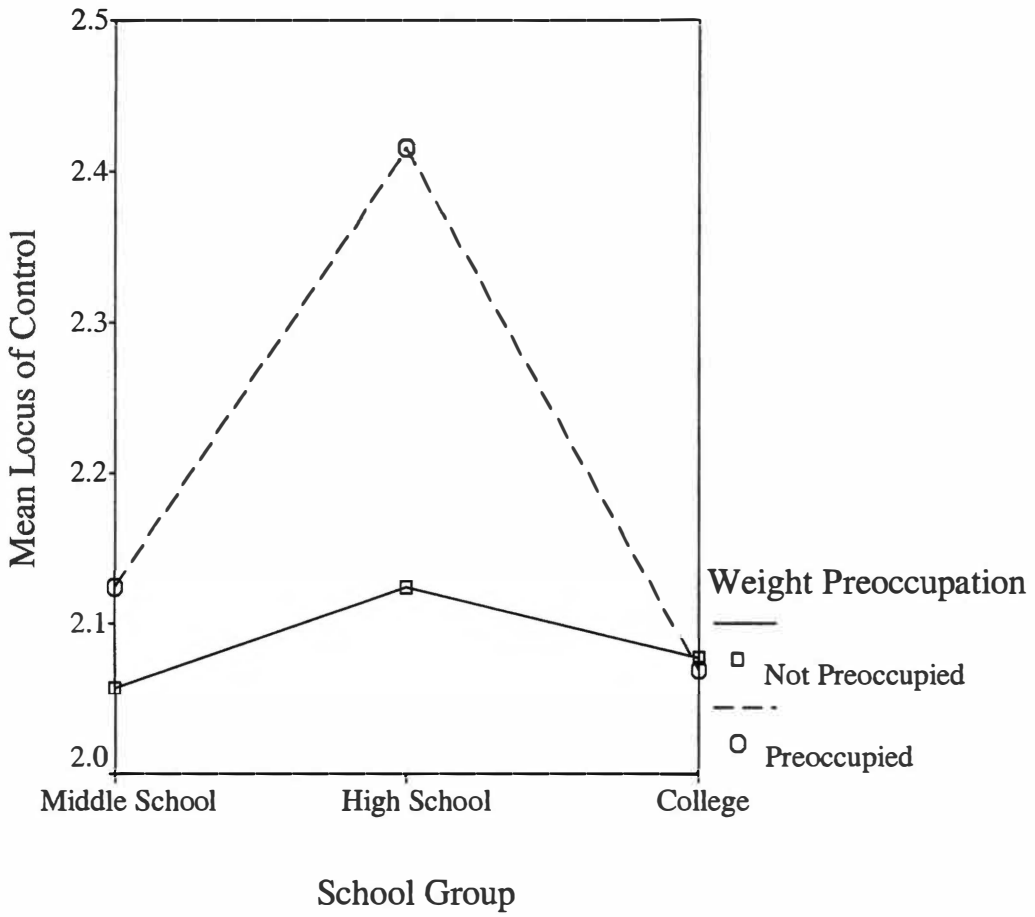


Figure 2. Graph of mean locus of control scores for weight preoccupied and non-weight preoccupied females for middle school, high school, and college groups.

Table 2

Descriptive Statistics for Locus of Control of Weight Preoccupied and Non-Weight Preoccupied Females

School Group	Weight Preoccupation	N	Mean	SD
Middle School	Not Preoccupied	88	2.057	.322
	Preoccupied	10	2.124	.347
High School	Not preoccupied	74	2.124	.364
	Preoccupied	22	2.416	.277
College	Not Preoccupied	155	2.077	.247
	Preoccupied	29	2.069	.284

t-tests. Locus of control was not significantly different for either the middle school, $t(96) = -0.61$, $p = .541$ or college, $t(182) = -0.15$, $p = .879$) when comparing WP and NWP females. However, the t-test for the high school group, $t(94) = -3.48$, $p = .001$, was significant and indicated differences in locus of control between those who were WP and NWP. The results from these three t-tests suggest that there appears to be more external locus of control in weight preoccupied females at the high school level than for the non-weight preoccupied females.

Analysis of Variance

As already mentioned, several outliers produced slight departures in normality of the data. However, it has been argued that ANOVA is robust enough to handle such small departures (C. Springer, Personal Communication, March 14, 2001). Two separate two-way ANOVAs for unequal N's using mean cell scores were utilized to test for differences in the dependent variables of self-esteem and locus of control. The independent variables in the 2X3 ANOVAs were school group (middle school, high school, college) and weight preoccupation (weight preoccupied, non-weight preoccupied). Therefore, differences were examined between the two weight preoccupation groups using three school groups. Tables 3 and 4 present the complete analyses of variance for the dependent variables.

When the overall F- ratio was found to be significant, two separate ANOVA's were then run to test for between-subjects effects in both the weight preoccupied (WP) and non-weight preoccupied (NWP) groups. If a significant F- ratio was found in the NWP and/or WP groups, Tukey's HSD Test for post-hoc multiple comparisons was used to determine which school group means differed. Table F-1 (see Appendix) reports the post-hoc comparisons for the dependent variables of self-esteem and locus of control.

Null Hypothesis 1 (Self-Esteem Differences)

To address the first null hypothesis, a two-way ANOVA was conducted. The independent variables were weight preoccupation status (weight preoccupied or non-weight preoccupied) and school group (middle school, high school, and college). The dependent variable was self-esteem. A summary of the ANOVA results is presented in Table 3.

The first null hypothesis was that there would be no differences in self-esteem in weight preoccupied and non-weight preoccupied females at each school group level. A significant F-ratio was obtained for the main effect of weight preoccupation, $F(1,372) = 56.03$, $p < .001$, and for the main effect of school group, $F(2,372) = 5.71$, $p<.01$. The hypothesis was rejected, as the ANOVA assessing the self-esteem scores for the three school groups yielded a significant interaction, $F(2,372) = 10.16$, $p < .001$. The interpretation was that the self-esteem scores of females were dependent on their school group and/or their weight group (i.e., WP, NWP).

As the interaction between school group and weight preoccupation status was significant, two separate ANOVA's were then used for the follow up analyses. The individual ANOVA for the NWP group was not significant, $F(2,314) = 0.79$, $p =.457$. This indicated that there were no differences in self-esteem, and those who were not weight preoccupied had generally the same level of self-esteem in middle school, high school, and college. Given the lack of self-esteem differences in the NWP group, no multiple comparison tests were performed on the NWP group. However, in the WP group the individual ANOVA was significant, $F(2,58) = 11.34$, $p =.001$ and indicated

Table 3

Analysis of Variance of Weight Preoccupation and School Group for Self-Esteem

Source	SS	df	MS	F
Weight Preoccupation (WP)	11.647	1	11.647	56.027**
School Group (SG)	2.372	2	1.186	5.706*
WP x SG	4.223	2	2.111	10.157**
Error	7.332	372	.208	

*$p<.01$ **$p<.001$

that there were school group differences in self-esteem, and therefore, post hoc tests were necessary.

Tukey's HSD test for post hoc multiple comparisons was used to determine which school group's self-esteem means differed within the weight preoccupied females. Tukey's test (see Table F-1, Appendix) indicated that there was no significant difference ($p = .999$) in the self-esteem scores of weight preoccupied females in the college and middle school settings. However, there were significant differences in self-esteem when comparing college and high school females ($p < .001$) and when comparing high school and middle school females ($p = .01$).

Null Hypothesis 2 (Locus of Control Differences)

The testing of this null hypothesis involved running a two-way ANOVA using school group and weight preoccupation as independent variables and locus of control as the dependent variable. Table 4 presents the analysis of variance for locus of control.

The second null hypothesis was that there would be no differences in locus of control in weight preoccupied and non-weight preoccupied females at each school group level. A significant F-ratio was obtained for the main effect of weight preoccupation, $F(1,372) = 6.55$, $p < .05$, and for main effect of school group, $F(2,372) = 9.37$, $p<.001$. The hypothesis was rejected, as the ANOVA assessing the self-esteem scores for the three school groups yielded a significant interaction, $F(2,372) = 5.16$, $p < .01$. The interpretation was that the locus of control scores of females, who were weight preoccupied (WP) or not weight preoccupied NWP), were not independent of the school group to which they belonged.

Table 4

Analysis of Variance of Weight Preoccupation and School Group for Locus of Control

Source	SS	df	MS	F
Weight Preoccupation (WP)	.582	1	.582	6.547*
School Group (SG)	1.666	2	.833	9.369***
WP x SG	.918	2	.459	5.161**
Error	33.068	372		

*p<.05 **p<.01 ***p<.001

Because the interaction of weight preoccupation with school group produced a significant F-ratio ($p < .01$), the cell means for the WP and NWP students in the three school groups were examined. Two separate ANOVA's were used for this follow up analysis. The individual ANOVA for the NWP group was not significant, $F(2,314) = 1.04$, $p = .356$. This indicated that there were no differences in locus of control, and those who were not weight preoccupied had generally the same locus of control in middle school, high school, and college. Given the lack of locus of control differences in the NWP group, no multiple comparison tests were performed on the NWP group. However, in the WP group, the individual ANOVA was significant, $F(2,58) = 9.23$, $p < .001$ and indicated that there were school group differences in locus of control and therefore, post hoc tests were necessary.

Tukey's HSD test for post hoc multiple comparisons was used to determine which school group's locus of control means differed within the weight preoccupied females. Tukey's test (see Table F-1, Appendix) indicated that there was no significant difference ($p = .866$) in the locus of control scores of weight preoccupied females in the college and middle school settings. However, there were significant differences in locus of control when comparing college and high school females ($p < .001$), and when comparing females from high school and middle school settings ($p < .05$).

Correlation Analysis

Pearson Product-Moment correlations (r) were used to test for the presence of a relationship between self-esteem and weight preoccupation in the three school groups. Also tested was the relationship between locus of control and weight preoccupation for each group. The following interpretational definitions of r-values, as proposed by

Guilford (1956), were used in this study and in the supplemental analyses to describe the strength of relationship of the data obtained:

<.20....slight correlation; almost negligible relationship

.20-.40....low correlation; small, definite relationship

.40-.70....moderate correlation; substantial relationship

.70-.90....high correlation; marked relationship

.90-1.00...very high correlation

Null Hypothesis 3 (Self-Esteem and Weight Preoccupation)

To assess the nature of the relationship between self-esteem and weight preoccupation, Pearson Product-Moment correlations were calculated on these two variables for each school group. Table 5 contains the overall Pearson correlation coefficients that were computed using all participants' Eating Attitudes Test scores (i.e., log derivatives) and their Rosenberg Self-Esteem Scale (SES) scores.

Using the entire sample of 378 females, a negative correlation ($\underline{r} = -.427$, $\underline{p} < .001$) was found which indicated a moderate, substantial inverse relationship between self-esteem and weight preoccupation. This suggested that as weight preoccupation increases, there is a trend toward a corresponding decrease in self-esteem or vice versa. No statement can be made about causation or directionality, only that there was a relationship between weight preoccupation and self-esteem.

The relationship between self-esteem and weight preoccupation for each of the three school groups was tested with the Pearson Product-Moment correlations. The findings for the middle school group (N=98) revealed an coefficient of $\underline{r} = -.372$, $\underline{p} < .001$. This low correlation for grade 6-8 adolescents indicated the presence of a small inverse

Table 5

Pearson Product-Moment Correlations of Self-Esteem and Locus of Control with EAT Scores (LogEAT) for Overall Sample and School Groups

Group	Variable	Correlation Coefficient
Overall Sample	Self-Esteem	-.427**
	Locus of Control	.276**
Middle School	Self-Esteem	-.372**
	Locus of Control	.252*
High School	Self-Esteem	-.657**
	Locus of Control	.557**
College	Self-Esteem	-.291**
	Locus of Control	.046

*p<.05 **p<.001

relationship between self-esteem and weight preoccupation. For the college females (N=184), the correlation was slightly lower ($r = -.291$, $p < .001$) suggesting a definite, but small inverse relationship between the variables. Of the three school groups tested, the strongest inverse relationship was noted with high school females (N=96) where the r-value was calculated at -.657 ($p < .001$). Therefore, when considering the self-esteem of females, there was a moderate, substantial relationship when relationships were examined using weight preoccupation scores (logEAT) in grade 9-12 adolescents.

Null hypothesis 3 predicted that there would not be a significant relationship between self-esteem and weight preoccupation in the three school groups. The overall correlation coefficient and three school group coefficients gave reason to reject hypothesis three, as significant relationships were found with self-esteem and weight preoccupation.

Null Hypothesis 4 (Locus of Control and Weight Preoccupation)

Hypothesis 4 predicted that there would be no significant relationship between locus of control and weight preoccupation in the three school groups. To assess the presence of the relationship between locus of control and weight preoccupation, Pearson Product-Moment correlations were calculated for each of the three groups. Pearson correlation coefficients were computed using all participants' EAT (logEAT) scores and their Children's Nowicki-Strickland Internal-External Locus of Control Scale (CNSIE) scores.

In the entire sample of 378 females, a low positive correlation ($r = .276$, $p < .001$) was found which indicated a small, definite relationship between locus of control and weight preoccupation. This suggests that as weight preoccupation increases, there is a very slight corresponding increase in locus of control scores (i.e., more external). No

statement can be made here about directionality or any causation, only that there was a positive relationship between weight preoccupation and locus of control.

This relationship of locus of control and weight preoccupation was also investigated for each school group level (see Table 5). For age 18-24 females in the college group (N=184), the calculated r-value was .046 (p =.531). Considering the large sample size of college students and this extremely low r-value, it could be argued that no relationship existed between locus of control and weight preoccupation in the college females. The results for the middle school group (N=98) found the coefficient to be .252 ($p < .05$). As this correlation coefficient fell between the range of $r = 0.20\text{-}0.40$, it was argued that a small, but definite relationship existed between locus of control and weight preoccupation for females in grades 6-8 (Guilford, 1956). In the high school group, the moderate positive correlation coefficient of .557 ($p < .001$) indicated the presence of a substantial relationship between locus of control and weight preoccupation.

Thus, when considering the locus of control and weight preoccupation of age 11-24 females, it appears that the relationship between the variables is most significant in grades 9-12. Therefore, for high school females, as locus of control scores increases (i.e., more external), the EAT scores also tend to increase (i.e., more weight preoccupied).

The justification for rejection of Null hypothesis 4 was as follows. The overall Pearson correlation provided support for rejection of hypothesis four. Additionally, separate group correlation coefficients provided rationale for rejection of hypothesis four due to statistically significant relationships being found at the middle school and high school levels. It was only in the college group that a significant relationship was not found between locus of control and weight preoccupation.

CHAPTER V

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

There were two main purposes of this study: (a) to determine if there was a significant difference in self-esteem and locus of control in a non-randomly selected sample of weight preoccupied and non-weight preoccupied adolescent and undergraduate college females; and (b) to generate further evidence of the relationship of locus of control and self-esteem to weight preoccupation in adolescent and undergraduate college females.

To address the purposes of the study, four null hypotheses were developed and tested: (1) There would be no significant difference in the level of self-esteem of weight preoccupied and non-weight preoccupied females at each school group level; (2) There would be no significant difference in the locus of control orientation of weight preoccupied and non-weight preoccupied females at each school group level; (3) There would be no significant relationship between the level of self-esteem and weight preoccupation in females at each school group level; and (4) There would be no significant relationship between locus of control and weight preoccupation in females at each school group level.

The female participants in this study were 198 adolescents attending middle and high school in Maryville, Tennessee, and 184 undergraduates enrolled at the University of Tennessee, Knoxville during the Spring Semester 2000. Females from a middle school, a high school, and from college introductory Psychology courses comprised the total sample (N=378). A Health & Nutrition Survey was developed and administered to these

participants with the Eating Attitudes Test-40 used to classify females as weight preoccupied or non-weight preoccupied.

Self-esteem measurement and scores for locus of control were based on values obtained on the Rosenberg Self-Esteem Scale and Children's Nowicki-Strickland Internal-External Locus of Control Scale. Six groups were used to evaluate the relationship of self-esteem and locus of control to weight preoccupation including: weight preoccupied middle school females (N=10); weight preoccupied high school females (N=22); weight preoccupied college females (N=29); non-weight preoccupied middle school females (N=88); non-weight preoccupied high school females (N=74), and non-weight preoccupied college females (N=155).

The statistical methods used in the analysis of data included: analysis of variance (to determine if there were significant differences among the groups on the dependent variables), Tukey's Honestly Significant Difference test (as post-hoc tests following a significant finding), and Pearson Product-Moment correlations (to determine the nature of relationship between self-esteem/locus of control and weight preoccupation). Demographic data for this study were presented using descriptive statistics.

Findings of the Study

Findings from this study were organized based on their relation to the demographic information obtained or to the four null hypotheses that were tested. Based on the analysis of data, general findings and findings related to each null hypothesis were as follows:

General Findings of the Study

1. Forty- nine percent of the participants were college females.
2. High school females accounted for twenty-five percent of the sample.
3. Twenty-six percent of the participants were middle school females.
4. Eighty-four percent of the entire sample was classified as non-weight preoccupied.
5. Sixteen percent of the entire sample was classified as weight preoccupied.
6. High school females (22.90 %) accounted for the highest degree of weight preoccupation, followed by college (15.80%) and middle school (10.20%) females, respectively.
7. Caucasian females comprised the majority of the total sample at 81.00 percent, while the category of "Other" ethnicity was second most common at 9.30 percent.
8. The additional ethnic categories of Hispanic, Asian, Native American, and African American were similar in occurrence ranging from 1.30 to 3.20 percent.
9. Seventy-five percent of the total females surveyed listed an ideal weight that was lower than their current weight.
10. Sixteen percent of the total female sample listed an ideal weight that was the same as their current weight.
11. Nine percent of the total sample listed an ideal weight that was more than their current weight.

Findings Related to Null Hypothesis 1 (Ho 1)

Ho 1: There would be no significant differences in the level of self-esteem of weight preoccupied and non-weight preoccupied females at each school group level.

1. There were no significant differences in self-esteem for the non-weight preoccupied females.
2. Significant differences in self-esteem were found in the weight preoccupied group when considering school group.
3. The self-esteem scores of high school weight preoccupied females differed significantly from that of middle school weight preoccupied females.
4. The self-esteem scores of high school weight preoccupied females differed significantly from that of college females.
5. The self-esteem scores of middle school weight preoccupied females did not differ significantly from that of college females.

Findings Related to Null Hypothesis 2 (Ho 2)

Ho 2: There would be no significant differences in the locus of control orientation of weight preoccupied and non-weight preoccupied females at each school group level.

1. There were no significant differences in locus of control for non-weight preoccupied females.
2. Significant differences in locus of control were found in the weight preoccupied group when considering school group.
3. The locus of control scores of high school weight preoccupied females differed significantly from that of middle school weight preoccupied females.
4. The locus of control scores of high school weight preoccupied females differed significantly from that of college females.
5. The locus of control scores of middle school weight preoccupied females did not differ significantly from that of college females.

Findings Related to Null Hypothesis 3 (Ho 3)

Ho 3: There would be no significant relationship between the level of self-esteem and weight preoccupation in females at each school group level.

1. Using a Pearson Product-Moment correlational analysis of the entire sample, a moderate, substantial, inverse relationship existed between self-esteem and weight preoccupation.
2. A small inverse relationship existed between self-esteem and weight preoccupation for middle school females.
3. A small inverse relationship existed between self-esteem and weight preoccupation for college females.
4. A moderate, substantial, inverse relationship existed between self-esteem and weight preoccupation for high school females.

Findings Related to Null Hypothesis 4 (Ho 4)

Ho 4: There would be no significant relationship between locus of control and weight preoccupation in females at each school group level.

1. Using a Pearson Product-Moment correlational analysis of the entire sample, a small, positive relationship existed between locus of control and weight preoccupation.
2. A small positive relationship existed between locus of control and weight preoccupation for middle school females.
3. No significant relationship existed between locus of control and weight preoccupation for college females.

4. A moderate positive relationship existed between locus of control and weight preoccupation for high school females.

Conclusions

Conclusions were specific to this study where weight preoccupied and non-weight preoccupied females were represented by middle school, high school, and college students enrolled during the Spring Semester 2000 in Maryville, Tennessee public schools and at the University of Tennessee, Knoxville during the 2000-2001 school year. On the basis of the findings and relative to the null hypotheses proposed, the following conclusions were made.

1. For middle school, high school, and college females, self-esteem had a significant relationship to females who were weight preoccupied.
2. External locus of control was related to weight preoccupation in middle school, high school, and college females.
3. Locus of control varies within weight preoccupied and non-weight preoccupied females and between school groups.
4. Self-esteem varies within weight preoccupied and non-weight preoccupied female and between school groups.

Recommendations

Based upon the analysis of data, findings, and conclusions, the following recommendations were made for further study.

1. Since this study had a relatively small number (N=61) of subjects in the weight preoccupied group, it is recommended that future studies should use larger samples.

2. Since small samples were obtained at each grade level, this study required grouping females using middle school (grades 6-8), high school (grades 9-12), and by college (grades 13-16) classifications. The replication of this study using adequate samples from every grade, could help identify or reaffirm the point/s at which self-esteem, locus of control, and weight preoccupation show change..
3. Future research assessing self-esteem, locus of control and weight preoccupation among middle school, high school, and college students should include gender comparisons. Understanding gender differences and gender similarities with these issues may assist school officials in developing appropriate primary and secondary interventions.
4. Future investigations should incorporate qualitative measures in conjunction with the quantitative measurement of weight preoccupation as measured by EAT scores. Having subjects describe their feelings, attitudes, and beliefs, could provide important information which may not be effectively measured on the EAT.
5. More research needs to be done using the Eating Attitudes Test-40 with a 1-6 scoring scheme, and using the Children's Nowicki-Strickland Internal-External Locus of Control scale with Likert scoring. Using alternative scoring schemes gives greater variability, and using these same adjusted questionnaires in larger studies would help to clarify their reliability and validity.

CHAPTER VI

THE STUDY IN RETROSPECT

Introduction

This chapter addresses the study in retrospect and presents aspects of the study that were not included in the first five chapters. An initial discussion will focus on the findings from the current study and how they related to previous research. Supplemental data and supplemental analysis is presented next as it was not part of the purpose of the study and not addressed in Chapter 4 or Chapter 5. Additional discussion in this chapter addresses the quality of the obtained data, with particular focus on data collection, statistical techniques, and instrumentation. The chapter concludes with implications for parents and health education.

Discussion

The inconclusive and contradictory results of prior studies regarding the development of self-esteem, locus of control, and their relationship to weight preoccupation, revealed a need for greater understanding in these areas. Therefore, this study tested four hypotheses examining group differences and relationships based on school group classification and on weight preoccupied status. This section will present some general trends that were observed, and discuss how the findings are related to previous research. Where appropriate, reasons will be provided for results that differed with or contradicted past research.

General Trends

In the current study, the overall combined (WP/NWP) findings for the three school groups appeared to be consistent with the Rosenberg's (1986) and Tashakkhori et al.

(1990) findings of a trend toward increased self-esteem from early to late adolescence. However, this study used three school groups while aforementioned studies compared different grades (ages) of students. For locus of control, the trend of movement toward externality for the combined sample appeared to contradict the Rotter (1975) and Nowicki-Strickland (1973) studies where adolescents were found to become more internal with age.

When looking at the cross-sectional picture of self-esteem and locus of control in the current study, the following results were noted. Self-esteem increased slightly from middle school to high school and then decreased slightly for college females to approximately the same level as middle school females. This slight dropping of self-esteem was not surprising and may be explained by the primarily freshman composition of the college sample. Issues like being away from home, balancing increased responsibilities, and dating may be a few reasons to explain this slight drop in the self-esteem of college females.

Locus of control followed a similar pattern of rising (i.e., more external) from middle school to high school and dropping in college students to levels seen in the middle school. It was expected that locus of control would drop (i.e., more internal) across school groups, and this was found when comparing high school and college groups, but not when comparing middle school to high school groups. The primary reason for this contradiction with prior research was speculated to be the result of school groups being composed of mixed grades, and containing an unequal number of subjects from each grade. Relatively small sample sizes in the middle school and high school groups (as

discussed later in this chapter) may have also contributed toward the contradiction with previous locus of control studies.

Locus of Control and Weight Preoccupation

Another contradictory result of this study occurred with the examination of group (WP/NWP) differences involving the variable of locus of control at the college level. In this study, weight preoccupied middle school and high school females were found to be more external, and this supported the results found in other eating disorder-related studies by Grace et al. (1985), King (1989), Swain et al. (1991), and Williams et al. (1990). However, in the current study, weight preoccupied college females had a similar degree of locus of control as their non-weight preoccupied counterparts. This result was not consistent with findings from previous studies by Davis. (1987), McCanne (1985), Williams et al. (1993) and others. In explaining this contradiction, the CNSIE may not have been the best instrument to use to measure locus of control in college age females, as it is most often used up to 12^{th} grade students. It could also be that differences in locus of control are not apparent in the college group unless severe weight preoccupation (i.e., clinical eating disorder) is present. This argument may have merit, as it is expected that a greater number of individuals will have a more internal locus of control by adulthood as they become more independent after leaving parental control. Therefore, it was speculated that the cutoff score of the EAT-40 may not be stringent enough in dichotomizing college samples into two distinctly different groups for the comparison of their locus of control.

The lack of difference in the locus of control scores of WP/NWP females at the college level was also statistically insignificant at the middle school (see Figure 2 and

Table G-2). The lack of statistical significance (p=.541) was not so surprising, as this could be explained by the small overall middle school sample size and/or sample size of the weight preoccupied group. The surprising finding, as mentioned, was that the middle school WP and NWP mean scores were lower (i.e., more internal) than the high school group, going against what is known about that younger adolescents being more external (Lefcourt, 1991). Again, small sample size may have contributed to this contradictory finding or unequal proportions of each grade that comprised the three school groups. Recall that the grade 10-12 surveys were sent home for completion, while grade 6-8 middle school students and grade 9 high school students completed surveys in health classes. There may have also been some unidentified variable/s that served to confound the results involving locus of control.

Although the findings at the high school level did corroborate with prior locus of control research, the sharp peak (see Figure 2, Chapter IV) was noteworthy of discussion. Again, it is possible that this difference between WP and NWP scores was not so striking, and the great difference may have been created by inadequate sample sizes. However, in assuming that a real difference did exist, it may be that the sharp peak was attributed to other variables such as the transition from a middle school to high school environment. Additionally, it is also possible that variables such as pubertal changes and competition for attention from boys could also be reflected in the sharp peak of Figure 2 (Chapter IV).

Self-Esteem and Weight Preoccupation

Research hypothesis 3 found that the correlation of self-esteem with weight preoccupation to be significant at the middle school (r = -.372), high school (r = -.291), and the high school (r = -.657) samples. These findings were consistent with previous

research (Cook, 1993; Early, 1993; Eldridge, 1993; Fisher et al., 1991). The presence of this relationship at all three levels gave support for the interactive effect of weight preoccupation and self-esteem on each other, regardless of school group. It was not so surprising that there was variance in the strength of correlation at each school group level, as other factors could have contributed to a lowered self-esteem. Likewise, other factors could have contributed toward weight preoccupation, and therefore affected the mean scores and correlation coefficients.

The sharp drop seen in Figure 1 (Chapter IV) for the self-esteem of weight preoccupied high school females may reflect a differentially greater importance that weight and body image have on females during the adolescent time period. Studies would support this notion, for much of who a female is (i.e., self-concept) and how she feels about herself centers around her body. However, caution should be reserved in interpreting this steep drop as small sample sizes may have created a greater difference in self-esteem than was actually present.

Results from research hypothesis 1 (independent t-tests) involving self-esteem and weight preoccupation supported the prediction that differences in self-esteem existed at the three school group levels. The statistical significance of this difference at the high school ($p<.001$) and college ($p=.001$) was consistent with prior studies on clinical and non-clinical samples (Grubb, 1993; Marino, 1989; Matthews, 1991; Vann, 1987). Although there lacked statistical significance at the middle school ($p=.028$), the value was close enough to suggest the presence of a difference in self-esteem between the WP and NWP subjects. Again, it was suspected that the small sample size, and particularly the limited number of WP subjects, was the reason for not finding a statistical difference.

Supplemental Data and Analysis

Given that the data analysis in Chapter 4 had met the purpose of the study and tested the null hypotheses outlined in Chapter 1, it was decided to perform some additional analysis involving supplementary data. Rationale for including this supplementary analysis was as follows. First, it was hoped that other statistical tests would tease out some important findings that were not found with the analysis of variance or correlational tests. Second, it was believed that the use of supplementary data and analysis might help to clarify how weight preoccupation differs within school groups. Third, it was believed that further analysis involving supplementary data might help to reaffirm the results already found in this study. Fourth, it was hoped that statistical testing using supplementary data would provide insight in terms of other factors that might contribute toward females becoming weight preoccupied. Finally, this supplementary analysis was performed due to the low/moderate correlations that were found and indication that something else could be occurring.

The decision to employ supplemental analyses stemmed from demographic data that appeared to have relevance during the computer hand entry of the surveys. Of particular interest were the variables of *current weight* and *ideal weight*. Using these two variables, another variable was created and referred to as *weight differential.* This newly created variable represented the difference between one's current weight and one's perceived ideal weight. Statistical testing was performed using this variable of weight differential.

Several questions were established beforehand to validate statistical analyses of this variable. First, it was desired to see if the variable of weight differential was related to weight preoccupation in the three school groups. Second, there was interest in

ascertaining if the NWP and WP groups differed in terms of weight differential across the three school groups. Finally, it was desired to see if weight differential, along with self-esteem and locus of control could be used to predict weight preoccupation. The use of correlational testing, analysis of variance, and regression analysis helped in answering these questions. Levene's Test of Equality of Error Variance, the Kolmogorov-Smirnov Test of Normality, and visual inspection of the data found no gross violations of the assumptions of equal variances or normal distribution with the new variable of weight differential.

Weight Differential Means and Standard Deviations

Figure 3 depicts the mean weight differential values for all three school groups in both the weight preoccupied and non-weight preoccupied categories. Table H-1 (see Appendix) provides a complete breakdown of the means and standard deviations relating to weight differential.

Females who were classified as non-weight preoccupied at the middle school and college levels were found to have a lower weight differential than their same school-grouped weight preoccupied counterparts. Middle school females, for example, who were not weight preoccupied, desired to weigh about 3.75 pounds less than their current weight, while the weight preoccupied middle school females desired to weigh about 28.20 pounds less than their current weight. College females who were weight preoccupied desired to weigh 14.10 pounds less than current weight, while the non-weight preoccupied college group preferred to be 9.29 pounds less on average. Interestingly, although the WP high school females had a lower ideal weight than the

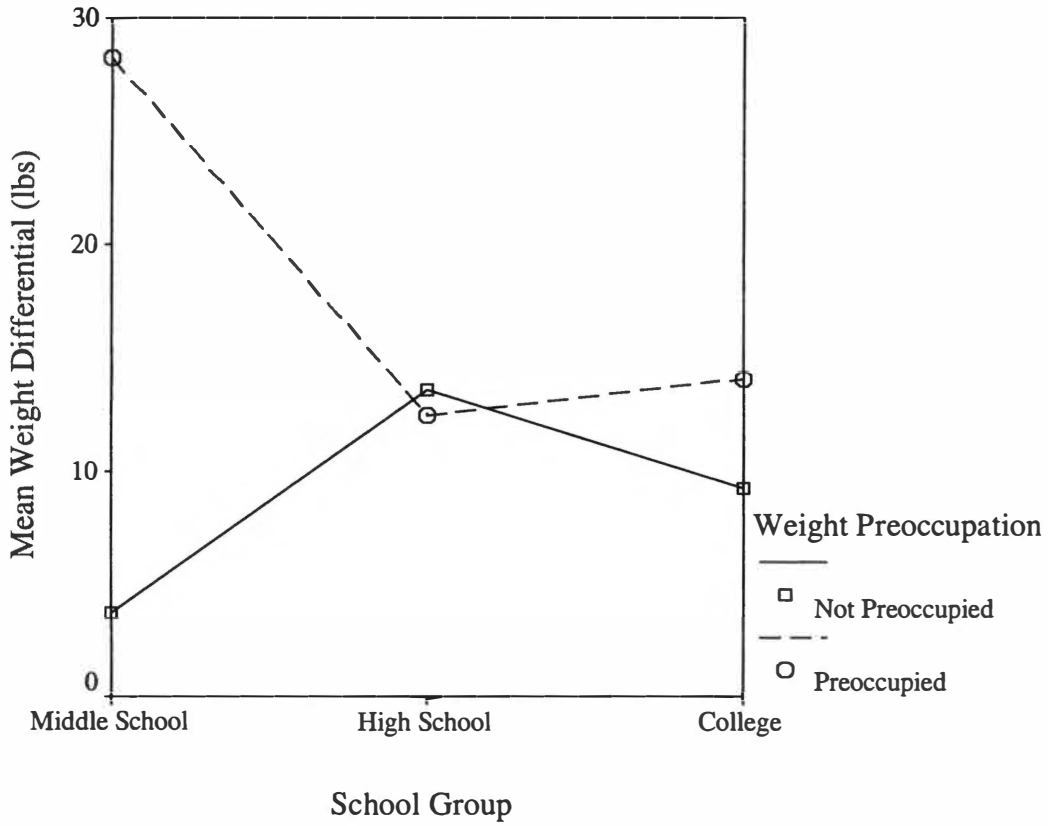


Figure 3. Graph of mean weight differential scores for weight preoccupied and non-weight preoccupied females for middle school, high school, and college groups.

NWP high school group, the weight differentials (i.e., 13.57 pounds vs. 12.50 pounds) were essentially the same.

Independent sample t-tests were used to test for group differences in the dependent variable of weight differential. The t-tests revealed that weight differential was not significantly different at the high school ($p=.828$) when comparing WP and NWP females. However, the t-tests for the middle school ($p<.001$) and college groups ($p=.019$) were significant and indicated differences in weight differential between those who were WP and NWP. The results from these three t-tests suggest that there appears to be a significant interaction between school group level and weight preoccupation, and that different weight differentials are found across the middle school and college groups. The variable of weight differential appears not to have much influence on weight preoccupation at the high school level.

Analysis of Variance

In order to determine if differences existed in the weight differential of the two dichotomous weight preoccupied groups, a two way ANOVA was run to compare the variable of weight differential at the three school group levels. The testing of the variable of weight differential involved running a 3x2 analysis of variance using school group and weight preoccupation as independent variables and weight differential as the dependent variable. As with prior analyses in Chapter 4, there were three subgroups within the school group category (i.e., middle school, high school, and college) and two subgroups within the weight preoccupied category (i.e., WP and NWP).

In the two way ANOVA for weight differential (see Table H-3, Appendix), a significant F-ratio was obtained for the main effect of weight preoccupation,

$F(1, 372) = 19.46$, $p<.001$. The main effect of school group was not significant, $F(2, 372) = 1.25$, $p = .29$. However, the ANOVA assessing the weight differential scores for the three school groups yielded a significant interaction, $F(2, 372) = 10.17$, $p < .001$. The inference from this two way ANOVA was that school group and/or weight preoccupation status did produce significant differences in the group means for the variable of weight differential. The interpretation was that weight differential and weight preoccupation status did not act independently of each other, but interacted in providing significant increases in mean scores for weight differential.

As the interaction between weight preoccupation and school group was significant, two separate ANOVA's were then run to test for between-subjects effects in both the weight preoccupied (WP) and non-weight preoccupied (NWP) groups. The individual ANOVA for the NWP group was significant at $p<.001$ and significant for the WP group at $p=.002$. This indicated that there were school group differences in weight differential for both the WP and NWP groups. Given the presence of weight differential differences, multiple comparison tests were performed on both groups.

Tukey's HSD test for post hoc multiple comparisons was used to determine which school group means differed within the weight preoccupied (WP) and non-weight preoccupied (NWP) group. Within the WP group, Tukey's test indicated that there was no difference ($p=.881$) in the weight differential of females when comparing the college and high school settings. However, there were significant differences in weight differential when comparing weight preoccupied college and middle school females ($p=.005$) and when comparing weigh preoccupied high school and middle school ($p=.003$) females. For the NWP group, Tukey's test found significant differences in

weight differential when comparing the middle school/high school groups ($p<.001$) and when comparing middle school and college groups ($p=.010$). There were no significant differences in weight differential when comparing non-weight preoccupied high school and college females ($p=.085$).

Correlation Analysis

It was also desired to address the issue of whether or not there existed a significant relationship between the variables of weight differential and weight preoccupation at each of the three school group levels. Testing involved the use of Pearson Product-Moment correlations to assess the presence or absence of any such relationship and strength of relationship.

The overall Pearson correlation coefficient revealed a low correlation($r = .307$) for weight differential with weight preoccupation. This correlation for the entire sample suggested that weight differential appeared to have a small, but definite relationship with weight preoccupation in females. Therefore, in general, the results suggested that the more that females believed they were away from their ideal weight, the more weight preoccupied they were, or vice versa. This finding might also be interpreted as the more that females feel they should weigh less or lose weight, the more preoccupied they tend to be. Of course, the opposite could also be true in that the more weight preoccupied females believe they are, the more feel they should lose weight or weigh less.

To obtain more meaningful information, this result was broken down further and analyzed by school group. The correlational tests (see Table H-4, Appendix) revealed that the smallest coefficient of $r = .194$ was found at the high school level, indicating a

negligible relationship at $p=.058$. For college females, a small, definite relationship was found between weight differential and weight preoccupation as the coefficient value of $r=.280$ was obtained. Middle school females presented the strongest coefficient value of $r = .567$, indicating the presence of a substantial relationship between weight differential and weight preoccupation. Correlations at the college and middle school were interpreted as having a significant relationship between the variables using a level of $p<.001$.

Results from the correlational testing suggest that there existed the presence of a significant relationship involving the variables of weight differential and weight preoccupation in the middle school and college setting. Testing on the high school sample indicated that no significant relationship existed between weight differential and weight preoccupation.

Analysis Involving Subject's Weight

Due to the presence of a strong relationship between weight differential and weight preoccupation at the middle school, it was of interest to investigate this issue a little further. It's worth noting that this additional probing did not build off of any predetermined hypothesis, yet some additional comparisons using the variable of "weight" seemed justified because of its influence in the weight differential computation. Therefore, t-test comparisons were made of the three school groups to obtain a general sense of how the issue/variable of weight may be involved in the etiology of female weight preoccupation. It was desired to see if simply weighing more than ideal weight, or being grossly overweight affected the degree of weight preoccupation. Although this part of the analysis was not highly scientific in technique, it afforded some general

insight as to how weight itself may play into the equation of weight preoccupation for adolescent and young adult females.

To best accomplish this tangential purpose, t-tests were performed using the actual weights for the three school groups and particularly focusing on the average weight within the WP group. Three separate t-tests were run to see if weight preoccupied females from the three school groups were significantly heavier than those who were not weight preoccupied. Results from the t-test analyses found that neither the college ($p=.769$) nor high school ($p=.224$) groups fell below the $p<.05$ standard. However, the middle school t-test checking for differences in mean weight for the WP and NWP groups was significant at $p<.001$.

Regarding the issue of weight, it was found that the weight preoccupied females at the middle school, high school, and college levels desired to weigh 28.2, 12.5, and 14.1 pounds less, respectively. Average weights for the weight preoccupied groups were found to be 150.00 pounds (middle school), 124.50 pounds (high school), and 133.86 pounds for the college females. Therefore, on face value, it was determined that weight preoccupied middle school females were heavier than the high school and college groups. This was not expected, and could be explained by the small sample size and presence of two extremely obese outliers in the middle school sample. When the outliers were removed from the data set, the average weight in middle school was 131.22 pounds and females desiring to weigh 19.1 pounds less. It is a possibility that the middle school sample was more unique than typically expected in terms of actual/desired weight.

The findings from the supplementary independent t-tests done using the variable of weight may partially help explain why self-esteem and locus of control may not have as

big of an effect on weight preoccupation as actual weight problems (i.e., weight) particularly in grade 6-8 females. The apparent influence of body weight (and ideal weight/weight differential) on weight preoccupation for middle school females may also help account for the small percentage (10.2 percent) of individuals being classified as weight preoccupied. Additional investigations may probe this issue further to ascertain if weight preoccupied middle school females are more likely than weight preoccupied high school or college females to be classified as overweight/obese (by a recognized standard). Of further interest would be delimiting the WP group at all school group levels to including only those of normal or near normal weight. This would help in controlling for the influence of obesity in the weight preoccupation equation. In middle school it may be that when females become weight preoccupied it is because they are overweight, and actual extra weight becomes a concern for them. The issue of ideal weight may not be as much of a mitigating factor for weight preoccupation in middle school but may be more influential by the time females reach high school.

Regression Analysis

In the data analysis of Chapter 4, the main study data was treated as categorical data by using two dichotomous groups (i.e., weight preoccupied & non-weight preoccupied) to compare self-esteem, locus of control, and weight differential in three school groups. For this regression analysis, supplemental and main study data were treated as continuous data. This supplemental analysis of data was done to ascertain if the variables of self-esteem, locus of control, grade, and weight differential (i.e., actual-ideal weight) could be used to predict weight preoccupation in females. Assumptions for the regression of normally distributed residuals and a mean of zero were satisfied using the log

transformation of EAT as was in the main study. Scatter plots were without a clear pattern and a regression analysis was undertaken.

In order to make best use of regression analysis, the three school groups were treated as age/grade. This was done because of the difficulty of using more than 2 groups in a regression analysis. Instead, individual grades were looked at and the 3 school groups were treated as grades. Therefore, the regression was done to answer the question of what was the effect on weight preoccupation, taking in account self-esteem, locus of control, grade (i.e., age), and weight differential. By entering all of the variables into the regression analyses, it was hoped that a better picture could be obtained of the influence these variables may have on weight preoccupation.

The predictors of weight differential, locus of control, and self-esteem were used in a simultaneous regression model and LogEAT (i.e. EAT score) used as the dependent variable representing one's level of weight preoccupation. Recall that the log transformation of EAT was used in the main study to normalize the EAT scores. Tables H-5 and H-6 in the appendix provide the main results from the multiple regression analysis.

The initial analysis of the regression model using analysis of variance found that the overall R-square, irregardless of school group, accounted for 22.6 percent of the variation in weight preoccupation scores ($F[3,374]=36.463$, $p<.001$). This ANOVA was run to determine if there was any predictability overall for the proposed model. Given the level of significance of $p<.001$(for R-square=.226), there was justification to continue and look at the individual pieces of the regression model and see which independent variable/s significantly predicted weight preoccupation. The results found that for the

overall sample, both self-esteem ($p<.001$) and weight differential ($p<.001$) were both significant predictors of weight preoccupation, and locus of control ($p=.432$) was not a predictor using a .05 level of significance. This suggests for females in general that weight preoccupation (i.e., EAT score or LogEAT) is affected by weight differential and self-esteem.

The multiple regression model was evaluated further in terms of school group. This was done to assess if different variables affected weight preoccupation at different school group levels. Table H-5 indicates that the regression model was significant at $p<.001$ for each of the three school group levels. More specific analysis was then done to assess which of the three predictor variables were significant at each school group level (see Table H-6).

The results suggest that for females in middle school, the best and only predictor of weight preoccupation was weight differential ($p<.001$). This finding is supported by the correlation ($r = .567$) presented earlier in this chapter. It appears then for middle school females, that self-esteem and locus of control were poor predictors of weight preoccupation in the population surveyed. These findings were partially surprising given the presence of the inverse relationship established in Chapter 4 between self-esteem and weight preoccupation. The apparent lack of self-esteem being a good predictor may not be so surprising recalling that the correlation coefficient was at best only modest ($r = -.372$).

For high school females, the regression model found that the variables of self-esteem ($p<.001$) and locus of control ($p=.004$) were both good predictors of weight preoccupation and weight differential ($p=.806$) was a poor predictor. These findings

supported the correlational results for high school females presented in Chapter 4 where substantial relationships were indicated for self-esteem and weight preoccupation (r = -.657) and for locus of control and weight preoccupation (r = .557).

Applying the regression to the college sample, it was the variables of self-esteem (p<.001) and weight differential (p=.002) that best predicted weight preoccupation for age 18-24 females. These findings gave support for the correlational findings found for in self-esteem (r = -.291) in Chapter 4 and for weight differential (r=.280) presented in this chapter. Locus of control, however, was not a good predictor (p=.192) of weight preoccupation for this college population, and this result was supported by the lack of a relationship (r=.046) between locus of control and weight preoccupation that was noted in Chapter 4.

In interpreting the results of the regression, some comments are worthwhile mentioning. The overall sample R-square of .226 was not exceptionally high and would suggest that there were other factors that are important with one being weight preoccupied. However, this overall R-square is not that important, as the goal of the regression was to determine what was happening at each school group level. When the overall R-square was broken down by school group, the individual R-squares for middle school (.340) and high school (.489) became useful. According to Springer (Personal Communication, March 30, 2001), an R-square greater than .300 was deemed to be necessary and acceptable for research involving human subjects. The R-square (.144) for the college group was fairly low.

The R-squares for each school group can be commented on more specifically. Interpreting the R-square for the high school and middle school provided some

meaningful insight regarding the regression model. In the high school group, there were two contributors (i.e., self-esteem and locus of control) accounting for almost 50 percent (R-square = .489) of the variability. It appears then that self-esteem and locus of control individually were predictors of weight preoccupation in the high school sample and weight differential was not. Interestingly, it was weight differential that was the only important contributor for the middle school group and it accounted for 34 percent (R-square = .340) of the variability. This indicates that for middle school females, weight preoccupation has more to do with weight itself than with the other variables.

The R-square value obtained for the college sample suggests that the variables of weight differential, self-esteem, and locus of control do not predict weight preoccupation as well as they do in the middle school and high school samples. Although the p-value was significant (<.001) for the college group, it only meant that it was the best model that was available, albeit not a very good model. For the college sample, the three variables only explained 14.4 percent (i.e., R-square = .144) of the variability in weight preoccupation. Therefore, if someone is weight preoccupied by college age, there appears to be other things present that may have built up over time, or have recently become influential in developing preoccupation with one's weight. Possible things that may account for the other 85.6 percent of the variability could be things like absolute weight, peer acceptance, personal appearance, or clothes that do not fit. The college regression results and low R-square indicate that weight preoccupation doesn't appear to be greatly influenced by global self-esteem, locus of control, or weight differential. These variables contributed to weight preoccupation but appeared not to be strong predictors at the college level.

Quality of Obtained Data

This section addresses the quality of obtained data as it relates to data collection, statistical analysis, and instrumentation. Some of the general observations are presented and mention made regarding strengths and weaknesses.

Data Collection

One of the limitations of this study was the difficulty gaining access to the secondary school subjects in the middle school and high school. Numerous letters to administrators and personal visits to each school were made to secure cooperation and obtain permission to use students as subjects for this study. Early on it was hoped that data collection could be done in the school environment. However, that was not an option as was evident from initial meetings that data collection would not be allowed to take up any class time, particularly in grades 10-12 where health classes were not required courses. In the end, it was agreed that health teachers in grades 6-8 at the middle school and grade 9 at the high school would distribute and/or administer the surveys.

It is likely that both the response rate and total number of students who actually received the survey could have been increased in this study. Conducting this research was really contingent on school administration support and teacher cooperation. It is doubtful that anyone involved at the secondary schools had the passion or vested interest in this particular topic. Data itself was collected near the end of the school year in the month of May, even though approval had been gained a month before. There was some difficulty in scheduling meetings and getting phone calls returned, and this was particularly troublesome at the middle school level.

In the end, the whole process seemed to be a bit rushed due to time constraints. It is possible that two weeks was not enough time for grades 6-8 and grades 10-12 parents to review the package sent home which included a cover letter, informed consent, assent sheet, and the Health & Nutrition Survey. The possibility also existed that parents didn't want their child to complete the survey for undetermined reasons. It may also be the case that survey packets were not sent home with every child in grades 6-8, as it was assumed that the health teachers had done this. Students themselves may not have been motivated to complete the surveys, and there was no control over student desire to participate, or encouragement by parents or teachers to participate.

Obviously the best scenario for data collection would have been to have all grade 6-8 and all grade 9-12 students in one room for a one shot administration of the survey. This would have minimized discrepancies in the way the survey was administered and prevented some of the aforementioned problems.

For the college students, there was no problem with data collection as consistent directions were given to all participants. In the college data collection sites, the distribution and collection of surveys was accomplished at one time and questions were answered when necessary. It is a possibility that teachers, parents, or siblings may have helped subjects fill out the survey and introduced bias into the responses. The lack of familiarity with the survey and its contents may have prevented parents and teachers from effectively answering any questions that came up when students were completing the survey.

Statistical Techniques and Sampling

The lack of control over consistency in data collection proved to contribute to lower school sample sizes than was anticipated. Originally, it was desired to have adequate sample sizes in each grade so as to help accurately pinpoint when things were changing in terms of the variables studied. However, the low response rate did not allow for age/grade comparisons and forced the study to instead look at school groups (i.e., middle school, high school, and college).

Approximately 30 percent of the entire male-female enrollment in grades 6-8 and 25 percent of the male-female enrollment in grades 9-12 completed the survey. As the responses from males were not used in this study, the low response rate in grades 6-12 produced smaller female samples than was desired in the middle school (N=98) and high school (N=96). Although the middle school and high school samples adequately represented the two different school groups, there was some inequity in terms of the number of subjects represented from each grade within the school group. There were even smaller samples when these adolescent school groups were broken down into the weight preoccupied group, where middle school (N=10) and high school (N=22) weight preoccupied groups were somewhat small for statistical analysis.

It is evident that there was more information about the college group (N=184) in this study to use in statistical analysis. Considering the small sample size of the weight preoccupied groups, there was minimal data to use in comparing group differences across the variables of self-esteem and locus of control. Therefore, some caution needs to be taken in the interpretation of all of the results presented earlier in Chapter 4 and

Chapter 5. However, the results are still due consideration and could be confirmed with larger samples in future studies. The use of the SPSS statistical package effectively provided all of the necessary analyses desired in this study. There was also no reason to believe that that statistical procedures employed were inadequate in terms of assessing group differences or the relationship between variables.

Instrumentation

This study utilized the Health & Nutrition Survey to obtain the desired data. Age 11-24 volunteers at middle school, high school and college settings completed three Likert scaled questionnaires and a demographic sheet. The Rosenberg Self-Esteem Scale (RSES) measured self-esteem, while the Eating Attitudes Test (EAT-40) and Children's Nowicki-Strickland Internal-External Control Scale (CNSIE) measured weight preoccupation, and locus of control. A critique is included here regarding the effectiveness and problems/benefits related to the instruments used in this study.

EAT-40. Using a cutoff score of 30 and above, the EAT-40 effectively divided the non-random female sample into two distinct groups (i.e., WP and NWP) for comparison of self-esteem and locus of control. The 40 items on the EAT were adequate in assessing weight preoccupation. Several items were found to questionable in terms of relevance to weight preoccupation, assuming that the population surveyed did not contain clinical diagnosed cases of eating disorders. For example, it seems reasonable to assume that many people with weight preoccupation have regular menstrual cycles (EAT item #22) unless they are severely anorexic. Individuals scoring "NEVER" on this item would have a higher EAT score, and may be females not yet at puberty or females with endocrine problems. Of course, all males would score "NEVER" on the same item. Other items

(EAT items #18, 19) didn't appear seem to tie directly to weight preoccupation as they didn't account for vegetarianism or differences in sleep patterns.

Although a cutoff score is used on the EAT to designate weight preoccupied individuals, it is possible that one or several EAT questions (items) may have served to place someone in the weight preoccupied group that shouldn't have been there. There is also possibility that individuals were left out of the weight preoccupied group. It is likely that these errors for group inclusion averaged out both ways. However, this problem could be remedied in several ways. The lowest and highest percentiles could have been used, although it would not allow for utilizing potentially valuable data in the middle quartiles. Using the standard error of measurement would use most of the data and yet provide more dichotomous weight preoccupied groups (i.e., WP and NWP) than using the recommended EAT cutoff score. Even a better remedy could have been the use of regression analysis that would treat the data as continuous and use all of the data.

Likert scaling was used on the EAT-40 but not in the most common 0-3 scoring system for responses in the symptomatic direction. Instead, this study used the 1-6 scoring system that others (Hart & Ollendick, 1985; Thompson, Berg & Shatford, 1987) have suggested. The alternative scoring was used for the purpose of better assessing variability in the subjects and their responses.

RSES. The Rosenberg Self-Esteem Scale appeared to be adequate in measuring self-esteem and effective in discriminating between weight preoccupied females at the middle school, high school and college level. The RSES was placed first in order in the Health & Nutrition Survey following the demographic sheet. The 10 items may not have been an adequate number of items to measure self-esteem if this study had used designated low

or high self-esteem groups. Likert scaling was used in scoring the RSES with a 1-4 scale used in place of the original Guttman scoring. This scoring scheme allowed subjects the ability to express their degree of agreement with statements and made assessing variations easier to complete. There were no problems reported by the subjects in terms of the items and their meaning.

CNSIE. The children's version of the Nowicki-Strickland Internal-External Control Scale (CNSIE) was used to measure locus of control in this study. The CNSIE was used on the entire sample for the sake of consistency in terms of statistical analysis. In reviewing the adult NSIE, the same items were used, although words such as "kids" were replaced with words like "people". As the primarily freshman college group was close enough to the recommended upper age limit of the CNSIE, it seemed reasonable and justifiable to use the CNSIE to measure locus of control with all three school groups. It was concluded that the CNSIE could be used to discriminate between weight preoccupied females at the middle school, high school, and college level. The children's locus of control scale was used for all groups in this study to make comparisons convenient.

It may be argued that the low r-value of 0.028 in college females for locus of control and weight preoccupation was due to the CNSIE not being an appropriate tool for college students. The CNSIE's content is basically the same as the adult NSIE scale, but the adult version has some extra items added. These extra items and/or the wording of the children's version of the NSIE, may have contributed to the lack of relationships/group differences involving locus of control in the college group. Additionally, the lack of differences found in the college group may have been because the upper age limits (i.e., age 18) of the CNSIE were used in 18-24 females.

Visual observations during the administration of the CNSIE found that the time to needed to respond to items was longer in comparison to EAT and RSES items. Questions and comments by the volunteers centered on the content of the items. Volunteers reported that they were "not used to thinking about things like that" and that the "items seemed abstract or strange". Further probing found that the volunteers understood the items but that they had to "concentrate harder" when answering the items.

Scoring of the CNSIE in this study used the 1-4 scoring scheme that was used by Sherman and Hofman (1988) and included the same four choices as was used with the RSES. It was believed in the current study that the Likert adapted CNSIE provided precise measurement of the degree of yes or no in the subjects' response.

Overall, the instrumentation appeared to be effective in meeting the purpose of the study. Ideally, it would have been preferred to have a fairly equal number of items from the variables of self-esteem, locus of control and weight preoccupation. By mixing up all of the items and employing the same Likert scoring scheme, there would be less chance of a response set and increased accuracy of results. Likert scaling on all three instruments was applicable to the non-paramentric statistical analyses and provided increased psychometric precision.

Implications for Parents and Health Education

The present problems with weight preoccupation and eating disorders are not new problems nor are they fads. Clinical eating disorders have gained attention since the early 1980's in both the research and treatment arenas. Similarly, problems with self-esteem and gender differences in self-esteem are not new phenomena. Low self-esteem has been linked to both school-related problems and eating-related problems.

Unfortunately in our busy and money-influenced country, things like self-esteem and eating disorders go unnoticed by many of our children's parents and by our schools.

The results of this research study have shown that weight preoccupation may be influenced by multiple factors and that no one factor can explain weight preoccupation. An attempt has been made to identify some of these variables and determine their relative importance in different school groups. However, parents and teachers need to focus their efforts on things they can control when they interact with children.

The best response that schools can make is to make meaningful changes in the curriculum. Most specifically, administrators and teachers need to start to value mental health and health education. Every grade should offer/require some sort of health education course that would address many mental and physical health issues. Schools should also realize the relationship of self-esteem to many other personal issues besides academic achievement. There should also be a realization by schools that eating disorders have one of the highest mortality rates of all the mental illnesses.

The issues of self-esteem and eating disorders need to be treated seriously by our schools in terms of primary prevention. Schools should make attempts to screen for eating disorders and assess the self-esteem of the students and monitor changes. The administrators and teachers should also be supportive of research on these issues and not worry that studies will find problems in their perfect school. Teachers and administrators should attempt to be more receptive to research that can be done in the school relative to concerns of students. Testing done by researchers in the school environment allows for a high response rate and comfort for students while they respond to questionnaires away

from teachers and parents. Schools should not overlook the importance of conducting their own evaluation research that focuses on the examination of preventive efforts.

Parents play an important role involving the issues of self-esteem and eating disorders. In particular, parents need to be concerned about the self-esteem of their children and need to be aware of the pressures young girls have with regard to body image and weight issues. Parents should understand that gender differences in self-esteem begin to be apparent by age nine with more noticeable drops in females' self-esteem occurring near adolescence. Parental involvement is crucial by pushing for gender equity in schools, and insisting that gender-fair classrooms are available that facilitate improved self-esteem for females.

It is crucial that parents and teachers be in close communication and know that their joint efforts will best serve the needs of children. It may be that the parents of eating disorder individuals are the ones who put pressure on the school to get preventive efforts initiated. Early intervention programs, parent education programs, and self-esteem building for all children are examples of things that parents can be involved in with the support of teachers. Parents can also push for the formation of community eating disorder organizations like the Knox Area Task Force on Eating Disorders (KATFED), and encourage schools to utilize such organizations where available.

The most difficult step in implementing some of these ideas/programs would be in shifting the values of schools and of the society at large. Health education and mental health issues are not as highly valued in schools as subjects involving math and sciences. Many schools may offer some health curricula yet not make it mandatory. It is true that mental/physical health services (i.e., nurse, psychologist, and guidance counselor) are

available in the many schools, however the focus is most often secondary or tertiary prevention. The ideal situation would be comprehensive school health education for K-12. Such a program would focus on primary prevention and not have a disorder-specific approach. Self-esteem, coping styles, social support and other characteristics are not specific to eating disorders, but are risk factors for other problems as well. Schools that provide students with opportunities in these areas may also be going a long way toward preventing other things like pregnancy, delinquency, alcohol and other drugs, STD's, and academic inadequacies. Having an approach that is not disorder-specific would help schools justify the allocation of time, money, and resources for programs. It also would assist health educators who don't have the time to implement all of the mental/physical health prevention programs.

REFERENCES

References

Abrams, K. K., Allen, L., & Gray, J. J. (1993). Disordered eating attitudes and behaviors, psychological adjustment, and ethnic identity: A comparison of black and white female college students. International Journal of Eating Disorders, 14(1), 49-57.

Alfonzo, V. C. (1995). Measures of quality of life, subjective well-being, and satisfaction with life. In D. B. Allison (Ed.), Handbook of assessment methods for eating behaviors and weight-related problems (pp. 28-80). Thousand Oaks, CA: Sage Publications.

Allison, D. B. (Ed.). (1995). Handbook of assessment methods for eating behaviors and weight-related problems: Measures, theory and research. Thousand Oaks, CA: Sage Publications.

Allison, S., Kalucy, R., Gilchrist, P., & Jones, W. (1988). Weight preoccupation among infertile women. International Journal of Eating Disorders, 7(6), 743-748.

American Psychiatric Association. (2000). Diagnostic and Statistical Manual of Mental Disorders (4th ed., text revision). Washington, DC: American Psychiatric Association.

Baird, P., & Sights, J. R. (1986). Low self-esteem as a treatment issue in the psychotherapy of anorexia and bulimia. Journal of Counseling and Development, 64, 449-451.

Banner, L. W. (1983). American Beauty. New York, NY: Knopf.

Bednar, R. L., Wells, M. G., & Peterson, S. R. (1989). Self-esteem: Paradoxes and innovations in clinical theory and practice. Washington, DC: American Psychological Association.

Beere, C. A. (1990). Sex and gender issues: A handbook of tests and measures. Westport, CT: Greenwood Publishing Group, Inc.

Beren, S. E., & Chrisler, J. C. (1990). Gender role, need for approval, childishness, and self-esteem: Markers of disordered eating? Research Communications in Psychology, Psychiatry and Behavior, 15(4), 183-198.

Bers, S. A., & Quinlan, D. M. (1992). Perceived-competence deficit in anorexia nervosa. Journal of Abnormal Psychology, 101(3), 423-431.

Blascovich J., & Ginsberg, G. P. (1978). Conceptual analysis of risk taking in risky shift research. Journal for the Theory of Social Behavior, 8, 217-230.

Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), Measures of personality and social psychological attitudes: Vol. 1 (pp. 115-124). San Diego, CA: Academic Press, Inc.

Boskind-White, M., & White, W. C. (1983). Bulimarexia: The binge/purge cycle. New York, NY: W. W. Norton.

Bram, S., Eger, D., & Halmi, K. A. (1982). Anorexia nervosa and personality type: A preliminary report. International Journal of Eating Disorders, 2(1), 67-74.

Branden, N. (1969). The psychology of self-esteem: A new concept of man's psychological nature. Los Angeles, CA: Nash Publishing Corporation.

Bruch, H. (1978). The golden cage: The enigma of anorexia nervosa. Cambridge, MA: Harvard University Press.

Carter, P. I., & Moss, R. A. (1984). Screening for anorexia nervosa and bulimia nervosa in a college population: Problems and limitations. Addictive Behaviors, 9, 417-419.

Cohen, J., & Cohen P. (1997). Applied multiple regression/correlational analysis for the behavioral sciences. Hillsdale, NJ: Lawrence Erlbaum Associates.

Cook, V. L. (1993). Self-esteem as a mediator of disturbance in body image: An experimental analysis. Unpublished doctoral dissertation, University of Mississippi.

Coopersmith, S. (Ed.). (1967). The antecedents of self-esteem. San Francisco, CA: W. H. Freeman & Company.

Cotton, N. S. (1983). The development of self-esteem and self-esteem regulation. In J. E. Mack, & S. L. Ablon (Eds.), The development and sustenance of self-esteem in childhood (pp. 122-150). New York, NY: International Universities Press, Inc.

Crandall, V. J., Katkovsky, W., & Crandall, V. C. (1965). Children's belief in their own control of reinforcement in intellectual-academic situations. Child Development, 36, 91-109.

Crowther, J. H., & Chernyk, B. (1986). Bulimia and binge eating in adolescent females: A comparison. Addictive Behaviors, 11, 415-424.

Davis, J. M., Wheeler, W., & Willy, E. (1987). Cognitive correlates of obesity in a nonclinical population. Psychological Reports, 60, 1151-1157.

Devilliers, D. E. (1993). Differences among bulimic-purging, non-purging, non-bingeing, weight and body shape obsessed, and non-bulimic females. Unpublished doctoral dissertation, Oklahoma State University.

Duthey, G. L. (1995). Determining if self-concept differences exist in a group of university women identified as eating disordered and noneating disordered. Unpublished master's thesis, University of Tennessee, Knoxville.

Dyer, C. (1995). Beginning research in psychology: A practical guide to research and statistics. Cambridge, MA: Blackwell Publishers.

Early, M. B. (1993). Developmental and gender difference in the relationships between body satisfaction, self-esteem, and depression: Implications for eating disorders. Unpublished doctoral dissertation, University of Minnesota.

Eating Disorders Awareness & Prevention (EDAP). (1998). Eating disorders [Brochure]. Seattle, WA: Author.

Eldredge, K. L. (1993). An investigation of the influence of dieting and self-esteem on dietary disinhibition. International Journal of Eating Disorders, 13(1), 57-67.

Erikson, E. H. (1982). The life cycle completed: A review. New York, NY: Norton.

Fish, B., & Karabenick, S. A. (1971). Relationship between self-esteem and locus of control. Psychological Reports, 29(3), 784.

Fischer, J., & Corcoran, K. (1994). Measures for clinical practice: Vol. 1. Couples, families, and children (2nd ed.). New York, NY: Free Press.

Fischer, M., Schneider, M., Pegler, C., & Napolitano, B. (1991). Eating attitudes, health-risk behaviors, self-esteem, and anxiety among adolescent females in a suburban high school. Journal of Adolescent Health, 12, 377-384.

Fitch, G. (1970). The effects of self-esteem, perceived performance, and choice on causal attributions. Journal of Personality and Social Psychology, 16, 311-315.

Fitts, W. H. (1965). The Tennessee self-concept manual. Nashville, TN: Counselor Recordings & Tests.

Fleming, J. S., & Watts, W. A. (1980). The dimensionality of self-esteem: Some results for a college sample. Journal of Personality and Social Psychology, 39, 921-929.

Fleming, J. S., & Courtney, B. E. (1984). The dimensionality of self-esteem: Hierarchical facet model for revised measurement scales. Journal of Personality and Social Psychology, 46, 404-421.

Forouzesh, M. R. (1978). Preventive health behavior in relation to risk-taking and locus of control among college students. Unpublished doctoral dissertation, University of Tennessee, Knoxville.

Garner, D. M. (1991). The eating disorder inventory-2 professional manual. Odessa, FL: Psychological Assessment Resources.

Garner, D. M., & Garfinkel, P. E. (1979). The eating attitudes test : An index of the symptoms of anorexia nervosa. Psychological Medicine, 9(2), 273-279.

Garner, D. M., Garfinkel, P. E., (Eds.). (1997). Handbook of treatment for eating disorders (2nd ed.). New York, NY: The Guilford Press.

Garner, D. M., Olmsted, M. O., Bohr, Y., & Garfinkel, P. E. (1982). The eating attitudes test: Psychometric features and clinical correlates. Psychological Medicine, 9, 871-878.

Garner, D. M., Olmsted, M. O., Polivy, J., & Garfinkel, P. E. (1982). Comparison between weight preoccupied women and anorexia nervosa. Psychosomatic Medicine, 46, 255-256.

Garner, D. M., Olmsted, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. International Journal of Eating Disorders, 2(2), 15-34.

Gergen, K. (1965). The effects of interaction goals and personalistic feedback on the presentation of the self. Journal of Personality and Social Psychology, 1, 413-424.

Gleghorn, A. A., & Penner, L. A. (1989). Body image and self-esteem. Paper presented at the Annual Meeting of the American Psychological Association. New Orleans, LA.

Goodsitt, A. (1983). Self-regulatory disturbances in eating disorders. International Journal of Eating Disorders, 2(3), 51-60.

Grace, P. S., Jacobson, R. S., & Fullager, C. J. (1985). A pilot comparison of purging and non-purging bulimics. Journal of Clinical Psychology, 41(2), 173-180.

Greenberg, L. (1996). Eating disorder tendencies, locus of control, and dysphoric dream content. Unpublished doctoral dissertation, The Fielding Institute.

Gross, J., & Rosen, J. C. (1988). Bulimia in adolescence: Prevalence and Psychosocial Correlates. International Journal of Eating Disorders, 7(1), 51-61.

Gross, J., Rosen, J. C., Leitenberg, H., & Willmuth, M. E. (1986). Validity of the eating attitudes test and the eating disorders inventory in bulimia nervosa. Journal of Consulting and Clinical Psychology, 54(6), 875-876.

Grubb, H. J., Dellers, M. I., & Waligroski, K. (1993). Factors related to depression and eating disorders: Self-esteem, body image, and attractiveness. Psychological Reports, 72, 1003-1010.

Guilford, J. P. (1956). Fundamental statistics in psychology and education. New York, NY: McGraw-Hill Book Company.

Halmi, K. A. (1983). Anorexia nervosa and bulimia. Psychosomatics: Journal of Consultation Liasion Psychiatry, 24(2), 111-129.

Halmi, K. A. (1985). Rating scales in the eating disorders. Psychopharmacology Bulletin, 21(3), 1001-1043.

Hamachek, D. E. (1988). Evaluating self-concept and ego development with Erikson's psychosocial framework: A formulation. Journal of Counseling and Development, 66, 354-360.

Hart, K. J., & Ollendick, T. H. (1985). Prevalence of bulimia in working and university women. American Journal of Psychiatry, 142, 851-854.

Harter, S. (1983). Developmental perspectives on the self-system. In P. H. Mussen (Series Ed.) & E. M. Hetherington(Vol. Ed.), Handbook of child psychology: Vol. 4. Socialization, personality and social development (4th ed., pp. 275-385). New York, NY: Wiley.

Harter, S. (1990). Adolescent self and identity development. In S. S. Feldman, & G. R. Elliot (Eds.), At the threshold: The developing adolescent (pp. 352-387). Cambridge, MA: Harvard University Press.

Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In R. F. Baumeister (Ed.), Self-esteem: The puzzle of low self-regard. New York, NY: Plenum Press.

Hattie, J. (1992). Self-concept. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Helmreich, R., & Stapp, J. (1974). Short forms of the Texas social behavior inventory: An objective measure of self-esteem. Bulletin of the Psychonomic Society, 4, 473-475.

Henderson, M., & Freeman, C. P. (1987). A self-rating scale for bulimia: The BITE. British Journal of Psychiatry, 150, 18-24.

Hill, J. P., & Lynch, M. E. (1983). The intensification of gender-related role expectations during early adolescence. In J. Brooks-Gunn, & A. C. Peterson (Eds.), Girls at puberty: Biological and psychosocial perspectives (pp. 201-228). New York, NY: Plenum Press.

Holland, A., Sicotte, N., & Treasure, J. (1988). Anorexia nervosa: Evidence for a genetic basis. Journal of Psychosomatic Research, 32, 549-554.

Hood, J. M., Timothy, E., & Garner, D. M. (1982). Locus of control as a measure of ineffectiveness in anorexia nervosa. Journal of Consulting and Clinical Psychology, 50(1), 3-13.

Hsu, L. K. (1990). Eating disorders. New York, NY: The Guilford Press.

Huck, S. W., & Cormier, W. H. (1996). Reading statistics and research (2nd ed.). New York, NY: Harper-Collins.

Johnson, C. L., & Larson, R. (1982). Bulimia: Analysis of moods and behavior. Psychosomatic Medicine, 44, 341-351.

King, M. (1989). Locus of control in women with eating pathology. Psychological Medicine, 19, 183-187.

Langer, E. J. (1983). The psychology of control. Beverly Hills, CA: Sage.

Lefcourt, H. M. (1976). Locus of control: Current trends in theory and research. Hillsdale, NJ: Erlbaum.

Lefcourt, H. M. (1981). Research with the locus of control construct: Vol. 1. Assessment methods. New York, NY: Academic Press.

Lefcourt, H. M. (1983). Research with the locus of control construct: Vol. 2. Developments and social problems. New York, NY: Academic Press.

Lefcourt, H. M. (1991). Locus of control. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), Measures of personality and social psychological attitudes: Vol. 1 (pp. 413-499). San Diego, CA: Academic Press, Inc.

Lefcourt, H. M., & Davidson-Katz, K. (1991). Locus of control and health. In C. R. Snyder & D. R. Forsyth (Eds.), Handbook of social and clinical psychology: The health perspective (pp. 246-266). Elmsford, NY: Pergamon Press.

Lemberg, R. (Ed.). (1992). Controlling eating disorders with facts, advice, and resources. Phoenix, AZ: The Oryx Press.

Leone, M. (1993). Effects of thin and oversize models on body image perception in college women. Unpublished doctoral dissertation, Hofstra University.

Levenson, H. (1973). Multidimensional locus of control in psychiatric patients. Journal of Consulting and Clinical Psychology, 41, 397-404.

Levenson, H. (1981). Differentiating among internality, powerful others, and chance. In H. M. Lefcourt (Ed.), Research with the locus of control construct: Vol. 1. Assessment methods (pp. 15-59). New York, NY: Academic Press.

Levit, M. Z., & Hart, D. (1991). Development of self-understanding in anorectic and nonanorectic adolescent girls. Journal of Applied Developmental Psychology, 12, 269-288.

Levitan, H. L. (1981). Implications of certain dreams reported by patients in a bulimic phase of anorexia nervosa. Canadian Journal of Psychiatry, 26(4), 228-231.

Mack, J. E. (1983). Self-esteem and its development: An overview. In J. E. Mack, & S. L. Ablon (Eds.), The development and sustenance of self-esteem in childhood (pp. 1-45). New York, NY: International Universities Press, Inc.

MacPhail, C. G. (1993). Sex differences in self-esteem and locus of control development during adolescence. Unpublished doctoral dissertation, The University of New Brunswick.

Mahler, M. (1972). On the first three subphases of the separation-individuation process. International Journal of Psychoanalysis, 53, 333-338.

Marino, M. F. (1989). The development of self-concept in women with eating problems. Unpublished doctoral dissertation, Boston College.

Matthews, J. R. (1991). Library in a book: Eating disorders. New York, NY: Facts on File, Inc.

Mayhew, R., & Edelmann, R. J. (1989). Self-esteem, irrational beliefs and coping strategies in relation to eating problems in a non-clinical population. Personality and Individual Differences, 10(5), 581-584.

McCanne, L. F. (1985). Correlates of bulimia in college students: Anxiety, assertiveness, and locus of control. Journal of College Student Personnel, 26(4), 306-310.

McGuire, W. J., & McGuire, C. V. (1982). Significant others in self-space: Sex differences and developmental trends in the social self. In J. M. Suls (Ed.), Social psychological perspectives on the self (pp. 41-89). Hillsdale, NJ: Erlbaum.

McMillan, J. H., & Shumacher, S. (1993). Research in education: A conceptual introduction (3rd ed.). New York, NY: Harper-Collins College Publishers.

Mintz, L. B. (1989). Nonspecific eating disorders in two universities: Evidence for an epidemic. Paper presented at Annual Meeting of the American Psychological Association. New Orleans, LA.

Mintz, L. B., & Betz, N. E. (1988). Prevalence and correlates of eating behaviors among college women. Journal of Counseling Psychology, 35, 463-471.

Mizes, J. S. (1988). Personality characteristics of bulimic and non-eating disordered female controls: A cognitive behavioral perspective. International Journal of eating Disorders, 7, 541-550.

Mruk, C. (1995). Self-esteem: Research, theory, and practice. New York, NY: Springer Publishing Company, Inc.

Nassar, C. M., Hodges, P., & Ollendick, T. (1992). Self-concept, eating attitudes, and dietary patterns in young adolescent girls. The School Counselor, 39, 338-343.

National Association of Anorexia Nervosa and Associated Disorders (ANAD). (1991). When an image becomes an obsession: it's time to take a closer Look [Brochure]. New York, NY: Author.

Newman, B., & Newman, P. (1987). Development through life: A psychosocial approach (4th ed.). Chicago, IL: Dorsey Press.

Nowicki, S., & Duke, M. P. (1974). The locus of control scale for college as well as noncollege adults. Journal of Personality Assessment, 10, 874-880.

Nowicki, S., & Duke, M. P. (1983). The Nowicki-Strickland life span locus of control scales: Construct validation. In H. M. Lefcourt (Ed.), Research with the locus of control construct: Vol. 2 (pp. 9-43). New York, NY: The Academic Press.

Nowicki, S., & Rountree, J. (1971). Correlates of locus of control in a secondary school population. Developmental Psychology, 4(3), 477-478.

Nowicki, S., & Strickland, B. R. (1973). A locus of control scale for children. Journal of Consulting and Clinical Psychology, 40, 148-154.

Owens, K. (1995). Raising your child's inner self-esteem: The authoritative guide from infancy through the teen years. New York, NY: Plenum Press.

Palmer, R. L. (1979). The dietary chaos syndrome: A useful new term? British Journal of Medical Psychology, 52, 187-190.

Paulhus, D., & Christie, R. (1981). Spheres of control: An interactionist approach to assessment of perceived control. In H. M. Lefcourt (Ed.), Research with the locus of control construct: Vol. 1. Assessment methods (pp. 161-185). New York, NY: Academic Press.

Phares, E. J. (1976). Locus of control in personality. Morristown, NJ: General Learning Press.

Piran, N., Kennedy, S., Garfinkel, P.E., & Owens, M. (1985). Affective disturbance in eating disorders. Journal of Nervous and Mental Disease, 173, 395-400.

Platt, J., Eisenman, R., & Darbes, M. (1970). Self-esteem and internal-external control: A validation study. Psychological Reports, 26, 162.

Pope, H. G., Hudson, J. I., Jonas, J. M., Yurgelun-Todd, D. (1983). Bulimia treated with imipramine: A placebo-controlled, double-blind study. American Journal of Psychiatry, 140, 554-558.

Prat, R. S., Griscom, S., & Parish, T, (1979). Affective development in children, grades 3 through 12. Journal of Genetic Psychology, 135, 37-49.

Pyle, R. L., Halvorsen, P. A., Newman, P. A., & Mitchell, J. E. (1986). The increasing prevalence of bulimia in freshman college students. International Journal of Eating Disorders, 5, 631-647.

Rawls, M. L. (1993). The effects of an experimental program on the self-esteem of second grade children as measured by the Piers-Harris children's self-concept scale. Unpublished doctoral dissertation, Northeast Louisiana University.

Reid, D. W., & Ware, E. E. (1973). Multidimensionality of internal-external control: Implications for past and future research. Canadian Journal of Behavioral Science, 5, 264-271.

Reynolds, C. D. (1985). Empirical investigations of dimensions underlying self-concept and weight issues. Unpublished doctoral dissertation, University of Oregon.

Rosen, J. C., Gross, J., & Vara, L. (1987). Psychological adjustment of adolescents attempting to lose or gain weight. Journal of Consulting and Clinical Psychology, 55(5), 742-747.

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Rosenberg, M. (1979). Conceiving the self. New York, NY: Basic Books.

Rosenberg, M. (1986). Conceiving the self (2nd ed.). Malabar, FL: R. E. Krieger

Rotter, J. B., Chance, J. E., & Phares, E. J. (1972). Applications of a social learning theory of personality. New York, NY: Holt, Rinehart, & Winston.

Rotter, J. B., & Hochreich, D. J. (1975). Personality. Glenview, IL: Scott Foresman Company.

Rotter, J. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. Journal of Consulting and Clinical Psychology, 43(1), 56-67.

Rotter, J. B. (1982). The development and applications of social learning theory. New York, NY: Praeger Publishers.

Ryckman, R., & Sherman, M. (1973). Relationship between self-esteem and internal-external control for men and women. Psychological Reports, 32, 1106.

Salvia, J., & Ysseldyke, J. E. (1988). Assessment in special and remedial education. Boston, MA : Houghton Mifflin Company.

Sathyavathi, K., & Anthony, T. (1984). An attributional approach to locus of control, self-esteem, and alienation: A clinical study.

Scarano, G. M. (1991). The eating disorder continuum: Relationship to food/body and psychosocial issues. Unpublished master's thesis, University of Akron.

Scarano, G. M., Kalodner-Martin, C. R. (1994). A description of the continuum of eating disorders: Implications for intervention and research. Journal of Counseling and Development, 72, 356-361.

Schlundt, D. G., & Johnson, W. G. (1990). Eating disorders: Assessment and treatment. Needham Heights, MA: Allyn and Bacon.

Seligman, M. E. (1975). Helplessness. San Francisco, CA: Freeman.

Selman, R. L. (1980). The growth of interpersonal understanding. New York, NY: Academic Press.

Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. Review of Educational Research, 46, 407-441.

Sherman, A. C. (1991). The impact of gender on the relationship of locus of control to mental health indicators. Unpublished doctoral dissertation, University of Tennessee, Knoxville.

Sherman, L. W., & Hofmann, R. J. (1988). Locus of control and its relationship to self-esteem: A developmental association. Paper presented to the Midwestern Educational Research Association: ERIC Documents.

Shisslak, C. M., Pazda, S. L., & Crago, M. (1990). Body weight and bulimia as discriminators of psychological characteristics among anorexic, bulimic, and obese women. Journal of Abnormal Psychology, 99(4), 380-384.

Silverstone, P. H. (1992). Is chronic low self-esteem the cause of eating disorders? Medical Hypotheses, 39, 311-315.

Simmons, R. G., & Rosenberg, F. (1975). Sex, sex roles, and self-image. Journal of Youth and Adolescence, 4, 229-258.

Smith, M. C., & Thelen, M. H. (1984). Development and validation of a test for bulimia. Journal of Consulting and Clinical Psychology, 52, 863-872.

Smith, R. B., Tedeschi, J., Brown, R., Lindskold, S. (1973). Correlations between trust, self-esteem, sociometric choice, and internal-external control. Psychological Reports, 32, 739-743.

Smelser, N. J. (1989). Self-esteem and social problems. In A. M. Mecca, N. J. Smelser, & J. Vasconcellos (Eds.), The social importance of self-esteem (pp. 1-23). Los Angeles, CA: University of California Press.

Smolak, L., Levine, M. P., & Striegel-Moore, R., (Eds.). (1996). The developmental psychopathology of eating disorders: Implications for research, prevention, and treatment. Mahwah, NJ: Lawrence Erlbaum Associates.

Squires, R., & Kagan, D. M. (1986). Personality correlates of disordered eating. International Journal of Eating Disorders, 5, 363-369.

Steffenhagen, R. A., & Burns, J. D. (Eds.). (1987). The social dynamics of self-esteem: Theory to therapy. New York, NY: Prager Publishers.

Strauman, T. J., & Glenberg, A. M. (1994). Self-concept and body image disturbance: Which self-beliefs predict body size overestimation? Cognitive Therapy, 18, 105-125.

Swain, B., Shisslak, C. M., & Crago, M. (1991). Clinical features of eating disorders and individual psychological functioning. Journal of Clinical Psychology, 47(5), 702-708.

Tashakkori, A., Thompson, V. D., Wade, J., & Valente, E. (1990). Structure and stability of self-esteem in late teens. Personality and Individual Differences, 11(9), 885-893.

Theander, S. (1970). Anorexia nervosa: A psychiatric investigation of 94 female patients. Acta Psychiatrica Scandinavia, 214, 1-194.

Thompson, D. A., Berg, K. M., & Shatford, L. A. (1987). The heterogeneity of bulimic symptomatology: Cognitive and behavioral dimensions. International Journal of Eating Disorders, 6, 215-234.

Thompson, S. C. (1991). Intervening to enhance perception of control. In C. R. Snyder, & D. R. Forsyth (Eds.), Handbook of social and clinical psychology: The health perspective (pp. 607-623). Elmsford, NY: Pergamon Press, Inc.

Vann, B. H. (1987). Gender, self-perception, and eating behavior. Unpublished doctoral dissertation, University of Arizona.

Viesselman, J. O., & Roig, M. (1985). Depression and suicidality in eating disorders. Journal of Clinical Psychiatry, 46(4), 118-124.

Waterman, A. S. (1984). The psychology of individualism. New York, NY: Praeger Publishers.

Weiner, B. (1990). Attribution in personality psychology. In L. A. Pervin (Ed.), Handbook of personality: Theory and research (pp. 473-474). New York, NY: The Guilford Press.

Weiten, W., & Lloyd, M. A. (2003). Psychology applied to modern life: Adjustment in the 21st century (7th ed.). Belmont, CA: Wadsworth/Thompson Learning.

Wells, L. E., & Marwell, G. (1976). Self-esteem: Its conceptualization and measurement. Beverly Hills, CA: Sage Publications, Inc.

Whitaker, L. C., Davis, W. N. (Eds.). (1989). The bulimic college student: Evaluation, treatment and prevention. New York, NY: The Halworth Press, Inc.

Williams, G. J., Chamove, A. S., & Millar, H. R. (1990). Eating disorders, perceived control, assertiveness, and hostility. British Journal of Clinical Psychology, 29(3), 327-335.

Williams, G. J., Power, K. G., Millar, H. R., Freeman, C. P., Yellowlees, A., Dowds, T., Walker, M., Campsie, L., MacPherson, F., and Jackson, M. A. (1993). Comparison of eating disorders and other dietary/weight groups on measures of perceived control, assertiveness, self-esteem, and self-directed hostility. International Journal of Eating Disorders, 14(1), 27-32.

Williamson, D. A., Cubic, B. A., & Gleaves, D. H. (1993). Equivalence of body image disturbance in anorexia and bulimia nervosa. Journal of Abnormal Psychology, 102, 1-4.

Williamson, D. A., Prahter, R. C., Bennett, S. M., Davis, C. J., Watkins, P. C., & Grenier, C. E. (1989). An uncontrolled evaluation of inpatient and outpatient cognitive-behavior therapy for bulimia nervosa. Behavior Modification, 13, 340-360.

Wilson, C. P. (1983). Fear of being fat: The treatment of anorexia nervosa and bulimia. New York, NY: Jason Aronson.

Wilson, G. T. (1984). Toward the understanding and treatment of binge eating. In R. C. Hawkins, W. J. Fremouw, & P. F. Clement (Eds.), The binge-purge syndrome: Diagnosis, treatment and research (pp. 264-289). New York, NY: Springer.

Worsnop, R. L. (1992). Eating disorders. Congressional Quarterly Researcher, 2(47), 1098-1119.

Wren, B., & B. Lask. (1993). Aetiology. In B. Lask, & R. Bryant-Waugh (Eds.), Childhood onset anorexia nervosa and related eating disorders (pp. 69-88). Hillsdale, NJ: Lawrence Erlbaum Associates.

Wylie, R. C. (1989). Measures of self-concept. Lincoln, NE: University of Nebraska Press.

Zerbe, K. J. (1993). The body betrayed: Women, eating disorders and treatment. Washington, DC: American Psychiatric Press, Inc.

Ziller, R., Hagey, J., Smith, M., & Long, B. (1969). Self-esteem: A self-social construct. Journal of Consulting and Clinical Psychology, 33, 84-95.

Zraly, K. M. (1995). Family environment, developmental, and personality predictors of eating disorder symptomatology in high school females. Unpublished doctoral dissertation, Fordham University.

APPENDICES

Appendix A

Correspondence with Office of Research and Compliance

(Human Subjects)

THE UNIVERSITY OF TENNESSEE
KNOXVILLE

Office of Research
404 Andy Holt Tower
Knoxville, Tennessee 37996-0140
PHONE: (865) 974-3466
FAX: (865) 974-2805
URL:http://www.ra.utk.edu/ora

02/28/2000

IRB#: 5813B

TITLE: A Developmental Investigation of Weight-Preoccupation in Adolescent and College Females: The Influence of Self-Esteem and Locus of Control

Duthey, Gregory Lee
Health & Safety Sciences
3310 Mt. Vernon Dr.
Knoxville, TN 37920

Wallace, Bill
Health & Safety Sciences
389 HPER Bldg.
Campus

Your project listed above was reviewed. It qualified for expedited review and has been approved.

This approval is for a period ending one year from the date of this letter. Please make timely submission of renewal or prompt notification of project termination (see item #3 below).

Responsibilities of the investigator during the conduct of this project include the following:

1. To obtain prior approval from the Committee before instituting any changes in the project.
2. To retain signed consent forms from subjects for at least three years following completion of the project.
3. To submit a Form D to report changes in the project or to report termination at 12-month or less intervals.

The Committee wishes you every success in your research endeavor. This office will send you a renewal notice (Form R) on the anniversary of your approval date.

Sincerely,

Brenda Lawson
Compliances

cc: Charles Hamilton

MARYVILLE HIGH SCHOOL
825 Lawrence Avenue
Maryville, Tennessee 37803
(423) 982-1132
Fax (423) 983-1440

December 1, 1999

Gregory Duthey
Department of Health and Safety Services
University of Tennessee
1914 Andy Holt Avenue
Knoxville, TN 37996-2710

Dear Mr. Duthey:

Please accept this letter as notice of my permission to involve students of Maryville High School in your planned survey. Please realize that this permission is contingent on your understanding that ninth grade students will be involved through wellness classes and that 10-12 grade students will be given a survey to take home. Our participation is also obviously contingent on IRB approval of your research application.

Sincerely,

David W. Messer

THE BECK INSTITUTE
For Cognitive Therapy and Research

Aaron T. Beck, M.D., *President*
Judith S. Beck, Ph.D., *Director*

DAVID M. GARNER, PH.D.
DIRECTOR OF RESEARCH
LICENSED CLINICAL PSYCHOLOGIST

EXECUTIVE DIRECTOR
NEUROBEHAVIORAL ASSOCIATES
4632 OKEMOS ROAD
OKEMOS, MI 48864
DIRECT FAX: 517-347-4107
DIRECT PHONE: 517-347-0405

Gregory Duthey
2211Highland Ave
Knoxville, Tennessee, 37916

Dear Mr. Gregory,

Thank you for your request for information on the Eating Attitudes Test (EAT). You have permission to use the EAT in your research and clinical work and there is no charge for this permission. I would appreciate you providing me with a copy of any reports or publications in which this instrument is used since it may serve as a useful resource for other researchers and clinicians.

I have also enclosed information about the Eating Disorder Inventory (EDI-2) which is a standardized, multi-scale instrument with a much broader focus than the EAT. It is comprised of 3 subscales tapping attitudes and behaviors concerning eating, weight, and shape (Drive for Thinness, Bulimia, Body Dissatisfaction) plus subscales assessing more general psychological traits or organizing constructs clinically relevant to eating disorders (Ineffectiveness, Perfection, Interpersonal Distrust, Interoceptive Awareness, Maturity Fears, Asceticism, Impulse Regulation, and Social Insecurity).

The EDI-2 manual, test booklets, the EDI-2 symptom checklist and profile forms are available from the publisher, Psychological Assessment Resources, P.O. Box 998, Odessa FL 33556. You can call PAR at 1-800-331-8378.

If you have further questions, please do not hesitate to contact me.

Sincerely,

David M. Garner, Ph.D.
Director of Research

GSB Building ■ City Line & Belmont Aves. ■ Suite 700 ■ Bala Cynwyd, PA 19004-1610 ■ Phone: (610) 664-3020 ■ Fax: (610) 664-4437

December 9, 1999

Gregory Duthey
Department of Health & Safety Sciences
University of Tennessee
1914 Andy Holt Avenue
Knoxville, TN 37996-2710

Dear Mr. Duthey:

Please accept this letter as notice of my approval to use the students from Maryville Middle School in your planned doctoral survey research. I have reviewed the materials you submitted to my office which included the informed consent, Health & Nutrition Survey, and assent form. There will be no problem from our perspective since students will be required to have parental permission to participate and completion of the survey will take only 20-30 minutes. It is our understanding that the data obtained will be not be released to the public, and that the Maryville School System will not be identified. Data may be requested by our office to assist in future curriculum development.

Please realize that our permission is contingent on your understanding that grade 6-8 students will be involved only through health classes. Administration of your survey will be permitted during class at a time deemed most appropriate by the middle school principal, Mr. Giffin. Participation from our office is also obviously contingent on the University of Tennessee's IRB approval of your Form B research application.

Please let me know if I can be of further assistance to you.

Sincerely,

Mike Dalton, Ph.D.
Director of Schools

Appendix C

Informed Consent Forms and

Assent Scripts

HEALTH AND NUTRITION SURVEY

Introduction & Assent Script (to be read by PI)

Hello. My name is Gregory Duthey and I am a graduate student at the University of Tennessee-Knoxville. I am a Ph.D. Candidate in Community Health Education, and have taught/coached at the college and junior/high school level. You will be pleased to know that I sincerely care about your thoughts and feelings regarding various health issues. I am conducting survey research about girls and young women for my college degree and hope that you will help me.

The attached survey contains items from several questionnaires and is designed to measure your attitudes, feelings, and beliefs in relation to various health issues such as exercise, diet, weight, food, nutrition, and feelings about yourself. It will take you approximately 30 minutes to complete the survey.

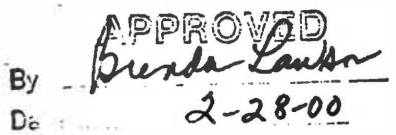
Before you begin to fill out this health and nutrition survey, it is important for you to know that your responses are totally confidential. There is no way for anyone to know what your responses are or to identify you from this survey. Keeping this is mind, please DO NOT put your name, social security number, birth date, or any other identifying marks anywhere on this survey. It is important that you are comfortable when completing this survey, and can answer truthfully without concern that teachers, parents, or others will know who you are or what your responses are.

The most important thing to remember about filling out this survey is that you make sure to answer all items. As you fill out this survey, you may find an item which seems confusing, or you may not understand the meaning of the words. You are encouraged to ask questions about those items or words which you do not understand. Your questions may be asked out loud, as others may have the same question but are afraid to ask. If you are more comfortable asking your question privately, you may ask the test administrator or teacher by walking to the front of the room. It is very important to understand the meaning of the items before answering them.

This is not a test. There are no right or wrong answers to the items on this survey. This survey represents your attitudes towards various health and nutrition issues. Your answers will be analyzed as group data to see how separate groups of girls/women and separate grades respond differently. Even though your parent/guardian has granted permission for you to participate, your participation is completely voluntary. You are free to stop at any point during the survey if you wish.

Thank you for your help in this research project.

You may now begin completing the survey



HEALTH AND NUTRITION SURVEY

Hello. My name is Gregory Duthey and I am a graduate student at the University of Tennessee-Knoxville. I am a Ph.D. Candidate in Community Health Education, and have taught/coached at the college and junior/high school level. You will be pleased to know that I sincerely care about your thoughts and feelings regarding various health issues. I am conducting survey research about girls and young women for my college degree and hope that you will help me.

The attached survey contains items from several questionnaires and is designed to measure your attitudes, feelings, and beliefs in relation to various health issues such as exercise, diet, weight, food, nutrition, and feelings about yourself. It will take you approximately 30 minutes to complete the survey.

Before you begin to fill out this health and nutrition survey, it is important for you to know that your responses are totally confidential. There is no way for anyone to know what your responses are or to identify you from this survey. Keeping this is mind, please DO NOT put your name, social security number, birth date, or any other identifying marks anywhere on this survey. It is important that you are comfortable when completing this survey, and can answer truthfully without concern that teachers, parents, or others will know who you are or what your responses are.

The most important thing to remember about filling out this survey is that you make sure to answer all items. As you fill out this survey, you may find an item which seems confusing, or you may not understand the meaning of the words. You are encouraged to ask questions about those items or words which you do not understand. Your questions may be asked out loud, as others may have the same question but are afraid to ask. If you are more comfortable asking your question privately, you may ask the test administrator or teacher by walking to the front of the room. It is very important to understand the meaning of the items before answering them.

This is not a test. There are no right or wrong answers to the items on this survey. This survey represents your attitudes towards various health and nutrition issues. Your answers will be analyzed as group data to see how separate groups of girls/women and separate grades respond differently. Even though your parent/guardian has granted permission for you to participate, your participation is completely voluntary. You are free to stop at any point during the survey if you wish.

Thank you for your help in this research project. You may now begin completing the survey

THIS SHEET IS YOURS TO KEEP

APPROVED
By Brenda Lawson
Da 2-28-00

INFORMED CONSENT FORM
Adolescent Health & Nutrition Survey

Dear Parent/Guardian:

Please let me introduce myself. My name is Gregory Duthey and I have taught health courses at the University of Tennessee, and taught/coached adolescent boys and girls at the junior high and high school level. I am asking that your daughter participate in a research study to assist me in completion of my graduate program at the University of Tennessee-Knoxville.

The aim of this study is to investigate the attitudes, feelings, and beliefs that adolescent females have with regard to health and nutrition. More specifically, the purpose of this study is to look at how female students feel about themselves, how much they see themselves being in control with different health issues, and how they feel about food, diet, and weight. In order to accomplish the purpose of this study, each student will complete the Health and Nutrition Survey. All of the student responses from this research study will be presented as group results based on age/grade level. The results of this study should help to contribute toward better understanding of developmental health and nutrition issues in the adolescent/young adult female population. Anticipated time to fill out the survey is about 30 minutes.

As a parent/guardian, there are several important things I should point out to you. First, every effort will be made on the part of the investigator to conduct the surveys at a time which is least disruptive to your child's learning. The school administration and the health teachers will make the decision about the most appropriate time to administer the survey within health classes in grades 6-9. Female students in grades 10-12 will complete the survey at home, and return it to me at the high school. Secondly, participation will not affect your child's grade or performance in class, and nonparticipation will incur no penalty. The goal is for each child to feel comfortable in honestly answering the Health & Nutrition Survey. Third, and most important, the students responses to the survey are totally confidential and anonymous. No names, social security numbers, or any type of information will be used to identify the student or the student's parent/guardian. Study data will be stored in a locked file cabinet in the University of Tennessee Department of Health & Safety Sciences and only accessible to the principal investigator.

There are no direct benefits as a result of participation in this survey research. Participation may be helpful in encouraging you to think about attitudes, feelings, and behaviors that are important in your life. There are no anticipated significant risks in participating in this study. It is a possibility that some psychological discomfort may occur in acknowledging some behaviors or feelings you have.

Students may only participate in this research study if this form is signed by their legal parent/guardian. Students or parents who decide to participate now can change their mind at any time afterwards. Participation is entirely voluntary and there are no anticipated risks in completing the survey. If you have questions at any time about the study or the procedures, or the student experiences adverse effects as a result of participating in this study, you may contact the principal investigator, Gregory Duthey, at (865) 974-5041. If you or your child has questions about your rights with regard to this study, contact the Compliance Section of the University of Tennessee Office of Research at (865) 974-3466.

Thank you for taking the time to consider my request.

Sincerely,

Gregory Duthey, Ph.D. Candidate
Principal Investigator

Bill C. Wallace , Ph.D.
Committee Chair/Major Professor

Department of Health & Safety Sciences
University of Tennessee-Knoxville
1914 Andy Holt Avenue
Knoxville, TN 37996-2710
(865) 975-5041 (dept. tel.)

I/we approve of _____ participating in the survey research study described above.
(print student's name)

_____	_____	_____ Parent/Guardian
Name (print)	Parent/Guardian (signature)	Date

I have made this correction A.D.

APPROVED
By Brenda Lawson
Date 2-28-00

INFORMED CONSENT FORM
College Student Health & Nutrition Survey

The aim of this research study is to investigate the attitudes, feelings, and beliefs that female college students have with regard to health and nutrition. More specifically, the purpose of this study is to look at how female students feel about themselves, how much they see themselves being in control with different health issues, and how they feel about food, diet, and weight.

In order to accomplish the purpose of this study, each student will complete the Health & Nutrition Survey. Surveys will also be given to middle school and high school female students in East Tennessee. The results of this study should help to contribute toward better understanding of developmental health and nutrition issues in the adolescent/young adult population.

Participation in this study is entirely voluntary and you will be completely free to withdraw from the study at any time. Data collection will be anonymous and the information will remain confidential. No names or identifying information will be put on the survey by the principal investigator or by the participants. College students from undergraduate psychology courses will receive extra credit only if the survey is completely filled out.

There are no direct benefits as a result of participation in this survey research. Participation in this study may be helpful in encouraging you to think about attitudes, feelings, and behaviors that are important in your life. There are no anticipated significant risks in participating in this study. It is a possibility that some psychological discomfort may occur in acknowledging some behaviors or feelings you have.

You will be asked to read and answer all items on a five page survey. The first page of the survey asks you for general demographic information about yourself. The remaining four pages ask you to provide answers to questions about food, diet, control, and aspects of personal self. It will take approximately 30 minutes to complete the survey.

If you have questions at any time about the study or the procedures, or you experience adverse effects as a result of participating in this study, you may contact the principal investigator, Gregory Duthey at (865) 974-5041. If you have questions about your rights as a participant, contact the Compliance Section of the Office of Research at (865) 974-3466.

The results of this study will be used for the completion of a doctoral dissertation and may be used in future research reports and presentations. Student responses from this study will be presented as group results based on age/grade level, and results will be available by written request. Study data will be stored in a locked file cabinet located in the UTK Department of Health & Safety Sciences. Before you sign this form, please ask any questions about any aspects of this study which are unclear to you. You are also encouraged to ask questions during the administration of the survey for anything you may not understand.

have read the above information and agree to participate in the research study described above.

Participant's Name (print)	Participant's Signature	Date
Investigator's Signature	Date	

APPROVED
By Linda Lawson
Date 2-28-00

Principal Investigator (PI): Gregory Duthey, M.S.
Faculty Advisors: Bill C. Wallace, Ph.D.,
Jack S. Ellison, Ed.D.

Address: Department of Health & Safety Sciences
University of Tennessee-Knoxville
1914 Andy Holt Avenue
Knoxville, TN 37996-2710
(865) 974-5041 (dept. tel.)

Appendix D

Health & Nutrition Survey

DEMOGRAPHIC INFORMATION

Please check the appropriate blank or fill in the blank with the appropriate response. Complete each of the categories below as accurately and honestly as you can. It is okay to estimate your height and weight if you are not sure how tall you are or how much you weigh. **Please make sure to answer <u>all of the blanks.</u>**

Age _____

Grade in School _____

Gender: Male _____ Female _____

Ethnic Status: Caucasian _____ African American _____ Native American_____

Asian _____ Hispanic _____ Other _____

Present Height _____

Present Weight _____

What do you consider to be your **<u>ideal weight</u>**? _____

What is your **<u>highest past weight</u>** within the last year?_____

HEALTH AND NUTRITION SURVEY

For the statements listed below, please use the scale provided and <u>check the box</u> **after the statement** that best represents your true feelings about yourself. If you make a mistake or change your response, make sure you clearly identify which response you selected. **Only make <u>one</u> response selection for each statement.**

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I feel that I am a person of worth, at least on an equal basis with others	☐	☐	☐	☐
2. I feel that I have a number of good qualities.	☐	☐	☐	☐
3. All in all, I am inclined to do things as well as most other people.	☐	☐	☐	☐
4. I am able to do things as well as most other people.	☐	☐	☐	☐
5. I feel that I do not have much to be proud of.	☐	☐	☐	☐
6. I take a positive attitude toward myself.	☐	☐	☐	☐
7. On the whole, I a satisfied with myself.	☐	☐	☐	☐
8. I wish I could have more respect for myself.	☐	☐	☐	☐
9. I certainly feel useless at times.	☐	☐	☐	☐
10. At times I think I am no good at all.	☐	☐	☐	☐
11. I believe that problems will solve themselves if I just don't fool with them.	☐	☐	☐	☐
12. I am blamed for things that just aren't my fault.	☐	☐	☐	☐
13. I feel that it doesn't pay to try hard because things never turn out right anyway.	☐	☐	☐	☐
14. I feel that parents listen to what their children have to say.	☐	☐	☐	☐
15. When I get punished, it seems like it's for no good reason at all.	☐	☐	☐	☐
16. I find it hard to change a friend's opinion (mind).	☐	☐	☐	☐
17. I feel that it's impossible to change my parent's mind about anything.	☐	☐	☐	☐
18. I feel that when I do something wrong there's very little I can do to make it right	☐	☐	☐	☐
19. I believe that there are some kids just born good at sports.	☐	☐	☐	☐
20. I feel that one of the best ways to handle problems is just not to think about them.	☐	☐	☐	☐

**PLEASE TURN TO THE NEXT PAGE >>

For the statements listed below, please use the scale provided and **check the box after the statement** that best represents your true feelings about yourself. If you make a mistake or change your response, make sure you clearly identify which response you selected. **Only make one response selection for each statement.**

	Strongly Agree	Agree	Disagree	Strongly Disagree
21. I feel that when a kid my age decides to hit me, there's little I can do to stop him or her	☐	☐	☐	☐
22. I have felt that when people were mean to me it was for no reason at all.	☐	☐	☐	☐
23. I feel that I can change what might happen tomorrow by what I do today.	☐	☐	☐	☐
24. I find it useless to try to get my way at home.	☐	☐	☐	☐
25. I feel that I have little to say about what I get to eat at home.	☐	☐	☐	☐
26. I feel that when someone doesn't like me there's little I can do about it.	☐	☐	☐	☐
27. I feel that it's useless to try in school because other children are just plain smarter than I am.	☐	☐	☐	☐
28. I am the kind of person who believes that planning ahead makes things turn out better.	☐	☐	☐	☐
29. I feel that I have little to say about what my family decides to do.	☐	☐	☐	☐
30. I believe that when bad things are going to happen they are just going to happen no matter what I try to do to stop them.	☐	☐	☐	☐
31. I feel that when somebody my age wants to be my enemy there's little I can do to change matters.	☐	☐	☐	☐

**PLEASE TURN TO THE NEXT PAGE >>

You are almost completed with this survey. The scale used to rate the following items is slightly different from th scale used on the previous page. Please check the blank after the question that best represents your true feelings abou yourself. If you make a mistake or change your response, make sure you clearly identify which response you selected **Make only one response selection for each statement.**

	Always	Very Often	Often	Sometimes	Rarely	Never
1. I like eating with other people.	□	□	□	□	□	□
2. I prepare foods for others but do not eat what I cook.	□	□	□	□	□	□
3. I become anxious prior to eating.	□	□	□	□	□	□
4. I am terrified about being overweight.	□	□	□	□	□	□
5. I avoid eating when I am hungry.	□	□	□	□	□	□
6. I find myself preoccupied with food.	□	□	□	□	□	□
7. I have gone on eating binges where I feel that I may not be able to stop.	□	□	□	□	□	□
8. I cut my food into small pieces.	□	□	□	□	□	□
9. I am aware of the caloric content of foods that I eat.	□	□	□	□	□	□
10. I feel bloated after I eat.	□	□	□	□	□	□
11. I feel that others would prefer if I ate more.	□	□	□	□	□	□
12. I vomit after I have eaten.	□	□	□	□	□	□
13. I feel extremely guilty after eating.	□	□	□	□	□	□
14. I am preoccupied with a desire to be thinner.	□	□	□	□	□	□
15. I exercise strenuously to burn off calories.	□	□	□	□	□	□
16. I weigh myself several times a day.	□	□	□	□	□	□
17. I like my clothes to fit tightly.	□	□	□	□	□	□
18. I enjoy eating meat.	□	□	□	□	□	□
19. I wake up early in the morning.	□	□	□	□	□	□
20. I eat the same foods day after day.	□	□	□	□	□	□

YOU'RE ALMOST DONE.....PLEASE TURN TO THE NEXT PAGE >>>>>>>>>>>>>>>>>>>>>>

This is the last page. Please check the blank after the question that best represents your true feelings about yourself If you make a mistake or change your response, make sure you clearly identify which response you selected. **Make only one response selection for each statement.**

	Always	Very Often	Often	Sometimes	Rarely	Never
21. I think about burning up calories when I exercise.	☐	☐	☐	☐	☐	☐
22. I have regular menstrual periods.	☐	☐	☐	☐	☐	☐
23. Other people think that I am too thin.	☐	☐	☐	☐	☐	☐
24. I am preoccupied with the thought of not having fat on my body.	☐	☐	☐	☐	☐	☐
25. I take longer than others to eat my meals.	☐	☐	☐	☐	☐	☐
26. I enjoy eating at restaurants.	☐	☐	☐	☐	☐	☐
27. I take laxatives.	☐	☐	☐	☐	☐	☐
28. I avoid foods with sugar in them.	☐	☐	☐	☐	☐	☐
29. I eat diet foods.	☐	☐	☐	☐	☐	☐
30. I feel that food controls my life.	☐	☐	☐	☐	☐	☐
31. I display self control around food.	☐	☐	☐	☐	☐	☐
32. I feel that others pressure me to eat.	☐	☐	☐	☐	☐	☐
33. I give too much time and thought to food.	☐	☐	☐	☐	☐	☐
34. I suffer from constipation.	☐	☐	☐	☐	☐	☐
35. I feel uncomfortable after eating sweets.	☐	☐	☐	☐	☐	☐
36. I engage in dieting behavior.	☐	☐	☐	☐	☐	☐
37. I like my stomach to be empty.	☐	☐	☐	☐	☐	☐
38. I enjoy trying new rich foods.	☐	☐	☐	☐	☐	☐
39. I have the impulse to vomit after meals.	☐	☐	☐	☐	☐	☐
40. I particularly avoid foods with a high carbohydrate content (breads, potatoes, etc.)	☐	☐	☐	☐	☐	☐

THANK YOU FOR YOUR HELP WITH THIS SURVEY. YOU'RE DONE! Please make sure that you have answered every statement and only selected one response.

Appendix E

Study Description/Testing Schedule

& Sign-up Sheets

Health And Nutrition Study

Male and female students from **Psychology 110** classes in the Fall 2000 term will receive course **extra credit** for participation in a doctoral survey research study. This study will compare how males and females feel about themselves, and how they feel about food, nutrition, diet and weight.

Participation in this study will take a total of 45-60 minutes of your time. You will be asked to complete three self-report inventories by responding to statements using Likert responses (strongly agree, agree, etc.). Results of the testing will be totally anonymous and confidential, and participation is completely voluntary.

Interested undergraduates are asked to sign-up for **one** of the numerous scheduled testing times listed below. Seating will be limited to 30 students for each of the testing stations. Only those individuals participating in the study will be allowed in the testing room. **Separate testing times have been provided for males and females.** You will be required to bring a valid UTK student ID card, and must be currently registered for the Fall 2000 semester.

All participants are asked to bring a pen or pencil to be used in filling out the questionnaires. Volunteers are free to withdraw at any time during the testing. However, extra credit will be awarded only to those students who fully complete all three questionnaires. It is important to arrive on time to prevent disruption and so that directions can be given to everyone at the same time.

If you have questions about this study or would like additional information, please call Mr. Gregory Duthey, Ph.D. student at 609-7157, or Dr. Jack S. Ellison, Ed.D., faculty advisor, Department of Health & Safety Sciences at 974-5041.

NOTE: You may participate in this study for extra credit in other psychology courses as long you have your instructor's permission. This study is open to all undergraduates at the University of Tennessee-Knoxville, even if extra credit is not desired.

TESTING SCHEDULE

Date	Start Times	Location
Wed. Nov. 8th	9:00am, 11:00am, 6:00pm	Room 475, Buehler Hall (Women only)
Thur. Nov. 9th	10:00am	Room 472, Buehler Hall (Women only)
	12:00 noon	Room 475, Buehler Hall (Women only)
	2:00pm, 6:00pm	Room 476, Buehler Hall (Women only)
Sun. Nov. 12th	11:00am, 2:00pm	Room 476, Buehler Hall (Men only)
Mon. Nov. 13th	11:00am	Room 133, Glocker (Men only)
	4:00pm, 7:00pm	Room 53a, Humanities (Men only)
Tues. Nov. 14th	8:00am	Room 118, Humanities (Women only)
	7:00pm	Room 65, Humanities (Women only
Wed. Nov. 15th	8:00am	Room 108, Glocker (Men only)
	2:00pm	Room 109, Glocker (Men only)
Thur. Nov. 16th	8:00am	Room 118, Humanities (Women only)

SIGN-UP for Health & Nutrition Study

Principal Investigator, Gregory Duthey (609-7157)

Faculty Advisor, Dr. Jack S. Ellison, Ed.D. (974-5041)

WED. November 8th (9:00AM) RM 475, Buehler Hall (WOMEN ONLY)

1)	11)	21)
2)	12)	22)
3)	13)	23)
4)	14)	24)
5)	15)	25)
6)	16)	26)
7)	17)	27)
8)	18)	28)
9)	19)	29)
10)	20)	30)

WED. November 8th (11:00AM) RM 475, Buehler Hall (WOMEN ONLY)

1)	11)	21)
2)	12)	22)
3)	13)	23)
4)	14)	24)
5)	15)	25)
6)	16)	26)
7)	17)	27)
8)	18)	28)
9)	19)	29)
10)	20)	30)

Health & Nutrition Study (Fall 2000)

The aim of this doctoral research study is to investigate the attitudes, feelings, and beliefs that college students have with regard to health and nutrition. More specifically, the purpose of this study is to look at how undergraduate psychology students feel about themselves, how much they see themselves being in control with different health issues, and how they feel about food, diet, and weight.

In order to accomplish the purpose of this study, each student will complete the Health & Nutrition Survey. Participants will be asked to read and answer all items on a five page survey. The first page of the survey contains general demographic information, while the remaining four pages ask students to respond to statements about food, diet, control, and aspects of personal self. It will take approximately 30-60 minutes to complete the survey packet, which consists of items from Garner's Eating Attitudes Test, Rosenberg's Self Esteem Scale, and the Nowicki-Strickland I-E Locus of Control Scale. Surveys will also be given to male and female middle/ high school students in East Tennessee. The results of this study should help to contribute toward better understanding of developmental health and nutrition issues in the adolescent/young adult population.

Participation in this study is entirely voluntary and students are completely free to withdraw from the study at any time. Data collection will be anonymous and the information will remain confidential. No names or identifying information will be put on the survey by the principal investigator or by the participants. A description of the study will be read beforehand by the PI to all volunteers, and informed consent forms required of all participants. College students from undergraduate psychology courses will receive extra credit only if the survey is completely filled out.

There are no direct benefits as a result of participation in this survey research. Participation in this study may be helpful in encouraging students to think about attitudes, feelings, and behaviors that are important in their lives. There are no anticipated significant risks in participating in this study. It is a possibility that some psychological discomfort may occur in acknowledging some behaviors or feelings that students have.

The results of this study will be used for the completion of a doctoral dissertation and may be used in future research reports and presentations. Student responses from this study will be presented as group results based on gender and age, and results will be available by written request. Study data will be stored in a locked file cabinet located in the UTK Department of Health & Safety Sciences.

Principal Investigator (PI): Gregory Duthey, M.S. **Address:** Dept. of Health & Safety Sciences
Faculty Advisors: Jack S. Ellison, Ed.D. University of Tennessee-Knoxville
Bill C. Wallace, Ph.D. 1914 Andy Holt Avenue
Knoxville, TN 37996-2710
(865) 974-5041 (dept. tel.)

Appendix F

Post Hoc Tests

Table F-1

Tukey's Honestly Significant Difference (HSD) Test for Self-Esteem and Locus of Control in Weight-Preoccupied Group

Variable	School Group	Comparison Group	Mean Difference	Standard Error
Self-Esteem	Middle School	High School	.5400**	.1609
		College	.0055	.1548
	High School	Middle School	-.5400**	.1609
		College	-.5435***	.1193
	College	Middle School	-.0055	.1548
		High School	.5345***	.1193
Locus of Control	Middle School	High School	-.2918*	.1115
		College	.0548	.1072
	High School	Middle School	.2918*	.1115
		College	.3466***	.0827
	College	Middle School	-.0548	.1072
		High School	-.3466***	.0827

*p<.05 **p<.01 ***p<.001

Appendix G

Independent Sample t-Tests

Table G-1

t-test for Equality of Means of Rosenberg Self-Esteem (RSES) Scores Within School Groups

School Group	t	df	MD	p
Middle School	2.229	96	.315	.028
High School	9.159	94	.932	<.001
College	3.246	182	.322	.001

Table G-2

t-test for Equality of Means of Children's Nowicki-Strickland Internal-External (CNSIE) Locus of Control Scores Within School Groups

School Group	t	df	MD	p
Middle School	-.613	96	-.067	.541
High School	-3.475	94	-.292	.001
College	.153	182	.008	.879

Appendix H

Supplemental Data Tables

Table H-1

Descriptive Statistics for Weight Differential of Weight Preoccupied and Non-Weight Preoccupied Females

School Group	Weight Preoccupation	N	Mean	SD
Middle School	Not Preoccupied	88	3.75	12.67
	Preoccupied	10	28.20	12.78
High School	Not Preoccupied	74	13.57	21.49
	Preoccupied	22	12.50	14.48
College	Not Preoccupied	155	9.29	10.23
	Preoccupied	29	14.10	8.93

Table H-2

t-test for Equality of Means for Weight Differential Scores Within School Groups

School Group	t	df	MD	p
Middle School	-5.78	96	-24.45	<.001
High School	0.22	94	1.07	.828
College	-2.37	182	-4.81	.019

Table H-3

Analysis of Variance of Weight Preoccupation and School Group for Weight Differential

Source	SS	df	MS	F
Weight Preoccupation (WP)	3762.22	1	3762.22	19.46*
School Group (SG)	482.58	2	241.29	1.25
WP x SG	3931.62	2	1965.81	10.17*
Error	71925.07	372	193.35	

*$p<.001$

Table H-4

Pearson Product-Moment Correlations of Weight Differential with EAT (Log EAT) Scores for School Groups of Females

Group	Variable	r	p
Overall Sample	Weight Differential	.307*	.01
Middle School	Weight Differential	.567*	<.001
High School	Weight Differential	.194	.058
College	Weight Differential	.280	<.001

Table H-5

Analysis of Variance for Three School Groups in Multiple Regression Model

School Group	Source	SS	df	MS	F
Middle School	Regression	7.866	3	2.622	16.134*
	Residual	15.274	94	.162	
	Total	23.140	97		
High School	Regression	20.484	3	6.828	29.331*
	Residual	21.417	92	.233	
	Total	41.902	95		
College	Regression	9.921	3	3.307	10.074*
	Residual	59.094	180	.328	
	Total	69.015	183		

*p<.001

Table H-6

Multiple Regression for Predicting Weight Preoccupation in Three School Groups with Variables: Self-Esteem, Locus of Control, and Weight Differential

School Group	Variable	B	SE	β	t	p
Middle School *	(Constant)	2.628	.656		4.009	<.001
	Self-Esteem	-.102	.130	-.090	-.788	.433
	Locus of Control	.117	.158	.078	.744	.459
	Weight Differential	.017	.003	.506	5.336	<.001
High School **	(Constant)	3.459	.590		5.862	<.001
	Self-Esteem	-.583	.103	-.503	-5.665	<.001
	Locus of Control	.503	.168	.277	2.993	.004
	Weight Differential	.001	.003	.019	.246	.806
College ***	(Constant)	4.182	.605		6.915	<.001
	Self-Esteem	-.357	.097	-.292	-3.675	<.001
	Locus of Control	-.248	.189	-.102	-1.309	.192
	Weight Differential	.014	.004	.226	3.205	.002

Note. *R^2 = .340; $p < .05$; N = 98.

**R^2 = .489; $p < .05$; N =96.

***R^2 = .144; $p < .05$; N = 184.

VITA

Gregory Duthey was born in Grand Forks, North Dakota as the oldest and only boy of four children. He attended public secondary schools near Manitowoc, Wisconsin and received his Bachelor of Arts degree in Communications from the University of high school and college levels while working as an account executive in radio and print media sales. In 1989, he returned to school pursuing graduate studies at the University of Wisconsin-Madison. After working as a teaching/research assistant for one year at UW-Madison, he accepted a position with the Department of Energy as a technical writer and moved to Oak Ridge, Tennessee. In 1993, he returned to graduate school to pursue a degree in Health Education/Health Promotion, receiving his Master of Science degree in 1995 from the University of Tennessee-Knoxville. He continued his graduate studies at the University of Tennessee in 1996 to pursue a Doctor of Philosophy degree. While enrolled in the doctoral program, he worked as a graduate teaching associate for the Department of Health and Exercise Science. In 1998, he received the Outstanding Graduate Teaching Associate award for that department. After completing his coursework in Community Health, he served as a graduate teaching assistant in the Department of Counseling, Deafness and Human Services of the University of Tennessee-Knoxville. The author is currently working as a graduate assistant in that department and serving as coordinator for the Gender, Culture, and Diversity research group. Following the completion of the requirements for his Ph.D. degree in May 2003, he plans to pursue a faculty position in higher education.